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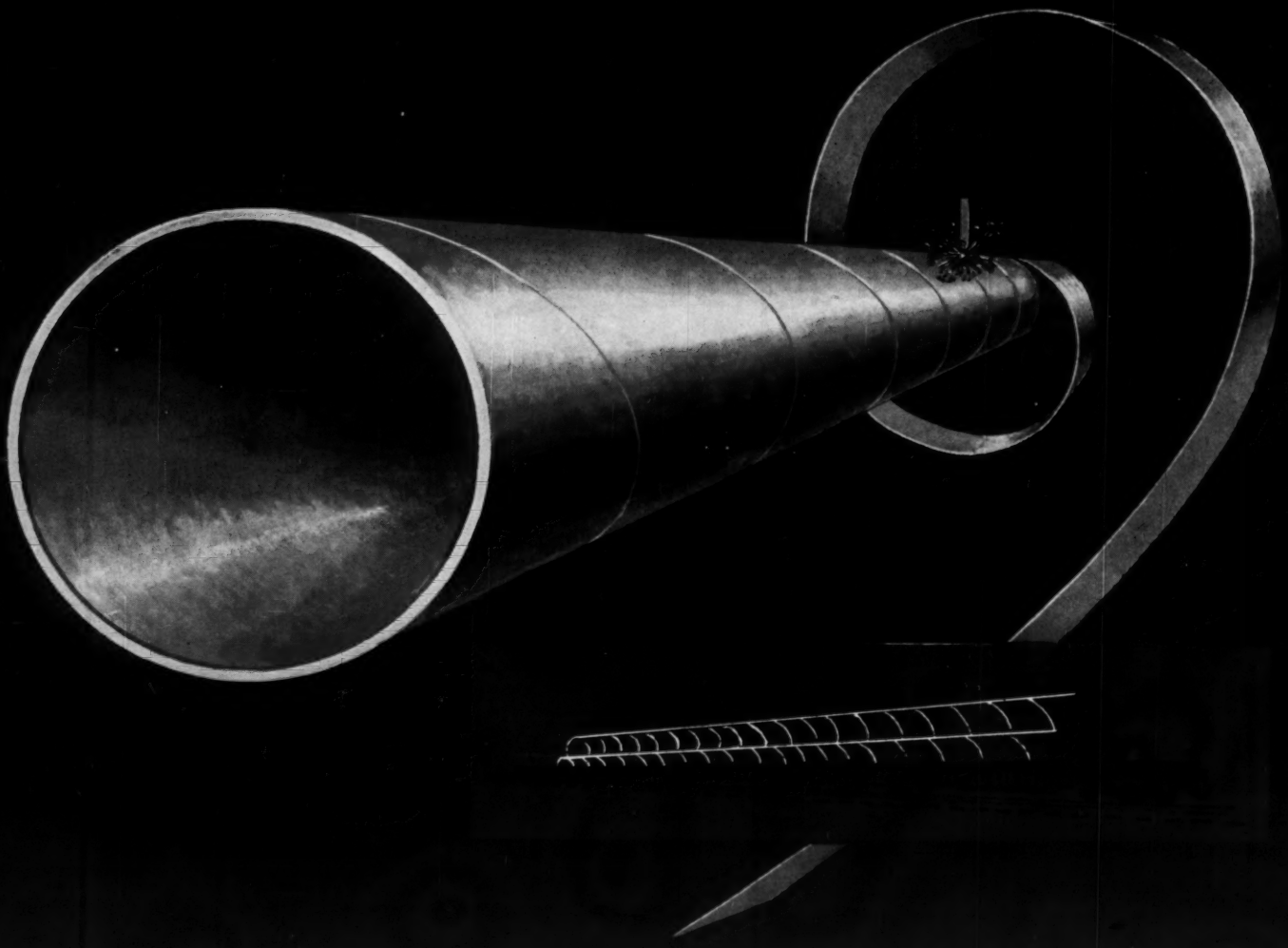

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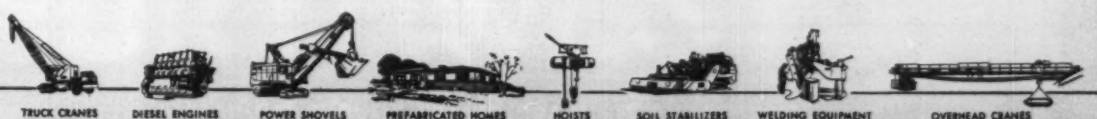

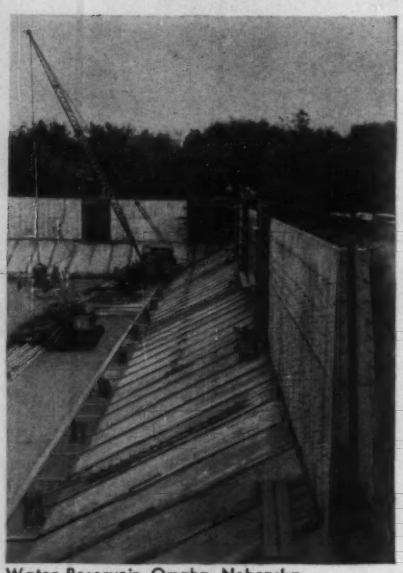

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CONTENTS ON PAGE 17

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Publisher

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Microwave dish at Malden Terminal Station.

Diagram of Turnpike and Microwave Routes.

Microwave Terminal Station at Bald Knob.

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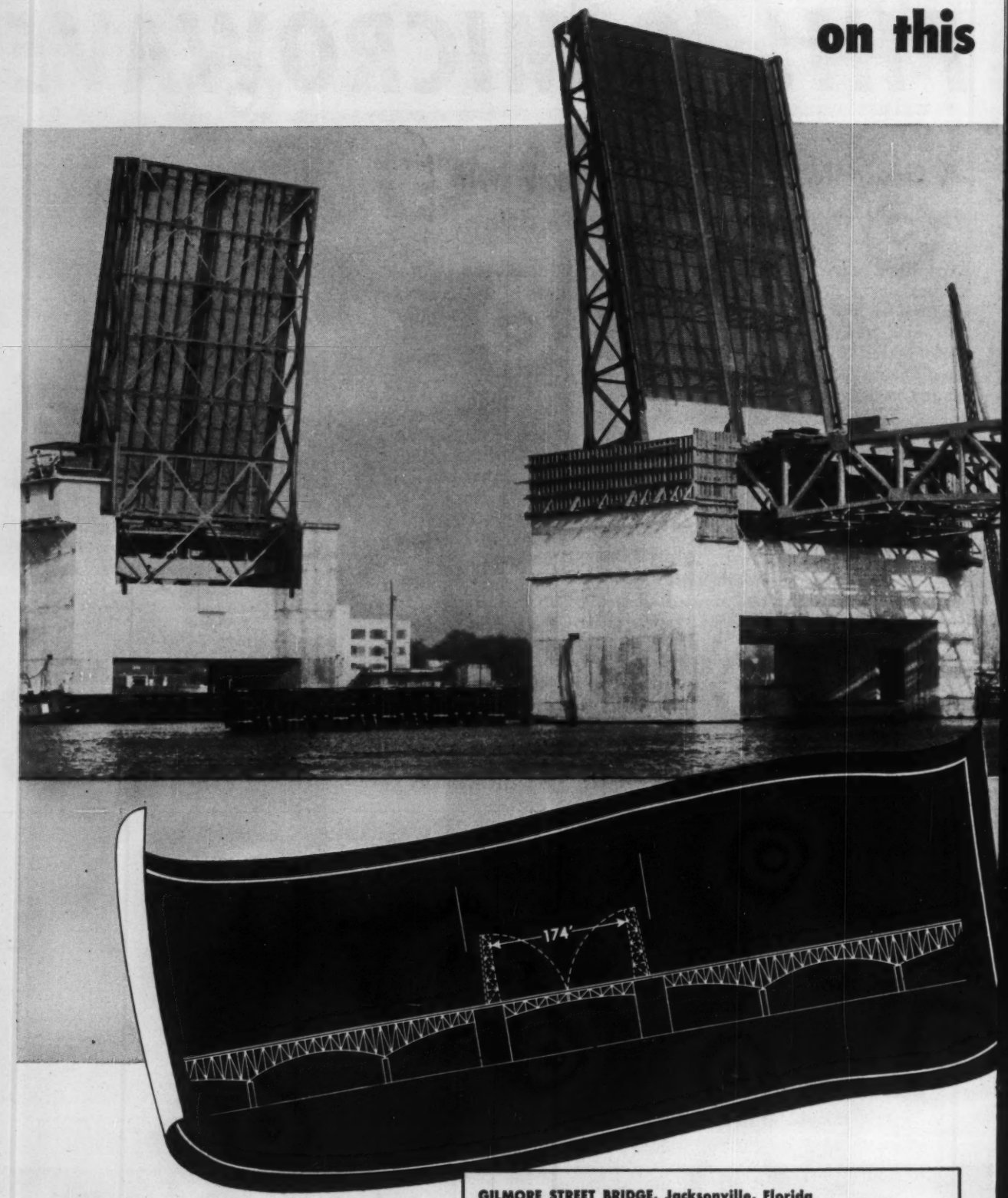

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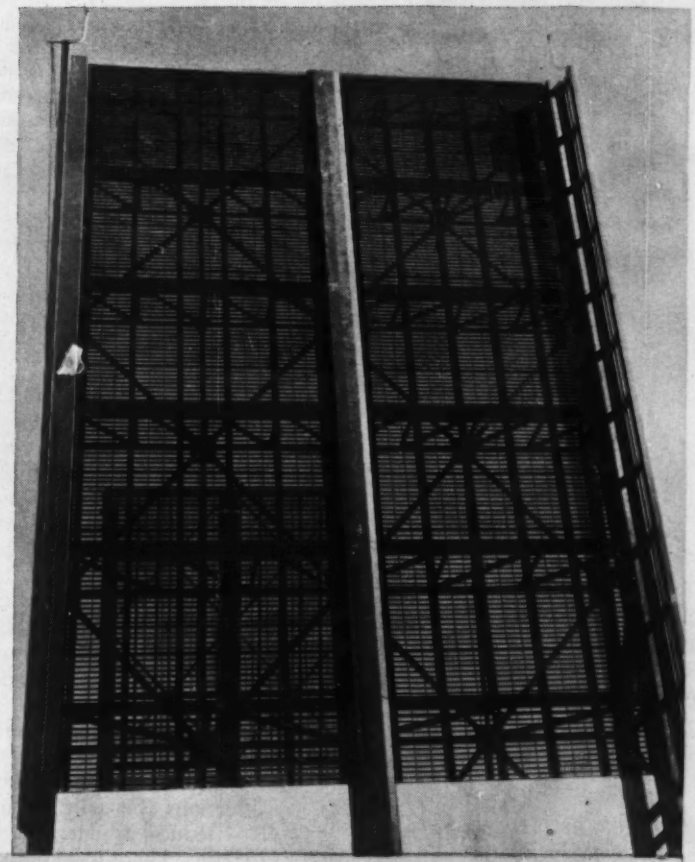

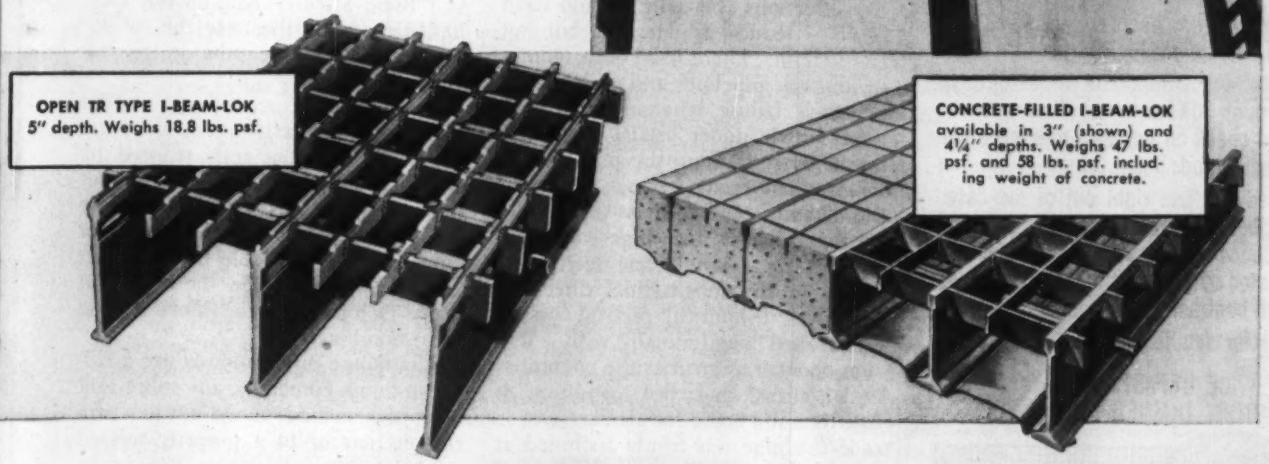

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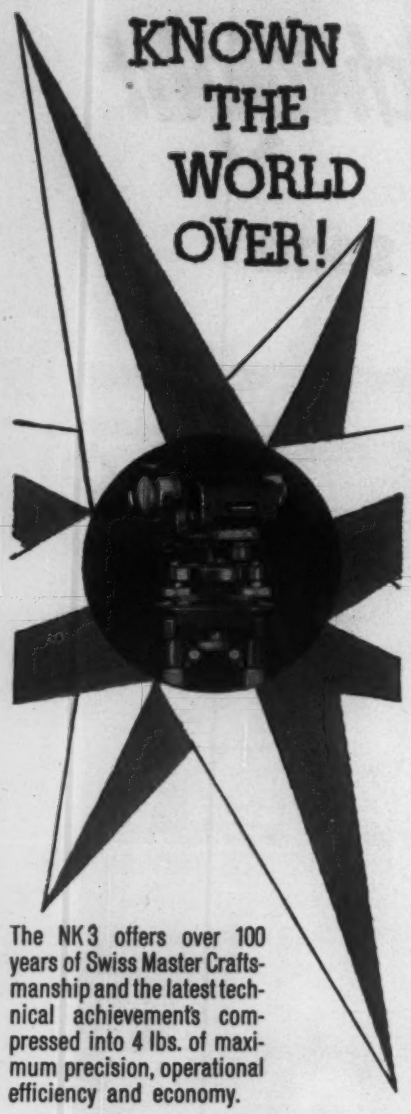

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READER COMMENT

Aqueduct Failure

Sir: Failures in engineering structures often broaden our knowledge and sharpen our perspective. The news item "Aqueduct Failure" in ENR Dec. 30, 1954, p. 17 interests me because the circumferential break was apparently a brittle type of fracture in steel that should have behaved in a more ductile fashion. There have been other failures or tests to destruction in pipes and tubes wherein mild steel acted brittle at temperatures well above the transition zone. These brittle failures make me cautious in adopting limit-design methods for fear that some of the assumed plastic hinges may turn out to be brittle fractures.

From the information in the ENGINEERING NEWS-RECORD account, I conclude that failure was caused by combined flextural and direct tension resulting from settlement in the riverbed. After a crack has started, the failure would progress rapidly because of the diminishing net section and section modulus, even though some readjustment of soil pressure takes place to reduce the applied moment. But, what caused the crack to start? Plastic deformation should have allowed local yielding to adjust the pipe to the settlement without actual rupture. Perhaps metallurgical and mechanical tests will reveal defective steel or lack of ductility; or, perhaps the biaxial stress condition causes brittleness.

The fact that the pipe is stressed in two directions (biaxially) would seem likely to reduce its ductility, but not its strength. There have been failures in long gas pipelines and at least one penstock failure wherein mild steel acted brittle under biaxial stress produced by restraining the pipe against longitudinal contraction. However, the circumferential stress of 12,000 psi would hardly seem high enough to account for a completely brittle behavior in the longitudinal direction. Moreover, cylindrical pressure vessels are stressed longitudinally with a tension one-half as great as the circumferential stress, and this condition is usually not a cause for alarm.

If the pipe was firmly anchored at points 200 ft apart, both flexural stress and direct tension could result from settlement. The fact that the pipe was only ½ in. apart at the break would indicate a large flexural stress added to direct tension. A length of 200 ft stressed to the yield point would stretch 2.6 in. Furthermore, if the earth surrounding the pipe resists its springing apart by 1,000 psf (skin friction on piles runs 500 to 800 psf), then—

Maximum direct tension stress before rupture, from settlement and temperature

$$= \tfrac{1}{2}\,(\text{in}) \times \frac{30{,}000{,}000}{200 \times 12} + \frac{\pi \times 4 \times 100 \times 1000}{13/16 \times \pi \times 48}$$

$$= 6250 + 12{,}500 = 18{,}750 \text{ psi.}$$

Because the pipe is restrained longitudinally, Poisson's Ratio will add some longitudinal tension when the pipe is under pressure. The usual way of computing this stress, based on Poisson's Ratio (0.3 for steel) and Hooke's Law, gives: 0.3 x 12,000 = 3,600 psi. longitudinally when the circumferential stress is 12,000 psi, and a total direct tension of not more than 22,350 psi. Tensile stress from bending moment added to this must have caused the failure, but why did the pipe break instead of yielding?

Possibly only a small bi-axial stress condition will cause the steel to be brittle. Perhaps there is a biaxial stress transition zone similar to the temperature transition zone for mild steel.

JAMES H. JENNISON
Structural Engineer
Pasadena, Calif.

Stresses at Bar Splices

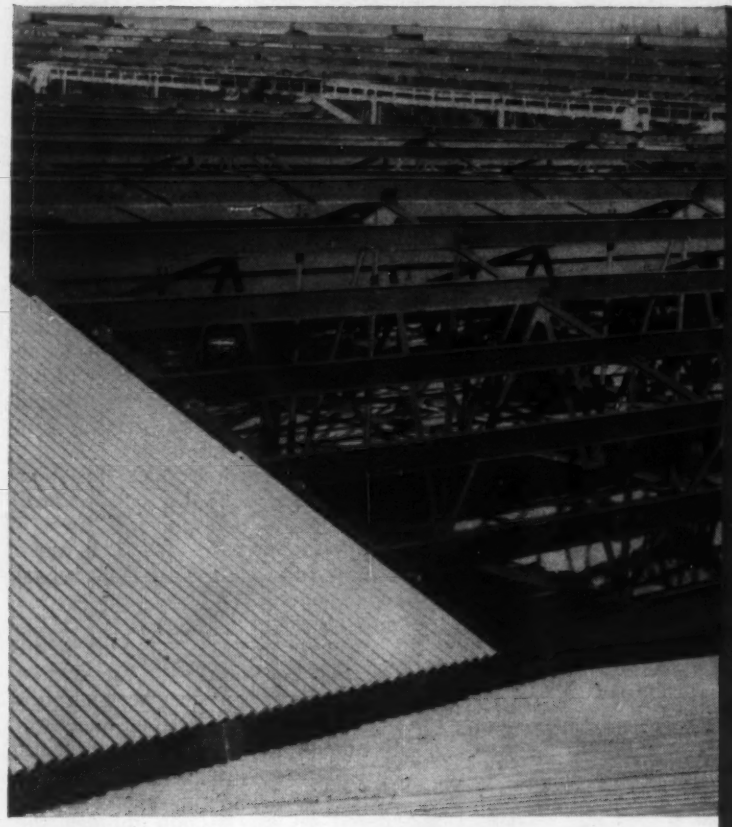
SIR: The article, "Failure of a Concrete Rigid Frame Blamed on Reinforcing Details," (ENR Nov. 11, 1954, p. 36) and the following discussions, "Bar Splices Compared," (ENR Dec. 23, 1954, p. 6) and "Is ACI Bond Stress High?" (ENR Dec. 30, 1954, p. 8) illustrate the futility of attempting to prescribe design procedure in a code.

The bond stresses allowed in the ACI Code were established from the results of numerous tests reduced by the usual safety factor. These stresses are functions only of the concrete strength, except for the reduction for top bars. The allowable limits are set sufficiently low to allow the minimum safety factor under the most adverse stress combination.

The failure in question is not a failure in bond. Generally, any splice that is properly made is equivalent to a continuous bar or to a properly welded joint.

In a region of uni-axial stress, the lap splice can be used anywhere in a structure—effective in proportion to the cosine of its angle relative to the direction of the principal stress, tensile or compressive. This effectiveness becomes zero when the splice is at right angles to a large tensile stress as

BUILDERS BEAT A DEADLINE WITH J&L JUNIOR BEAMS



JOB DESCRIPTION
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Borg-Warner Corporation
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Structural Steel Fabricator—
Indiana Bridge Company, Muncie, Ind.
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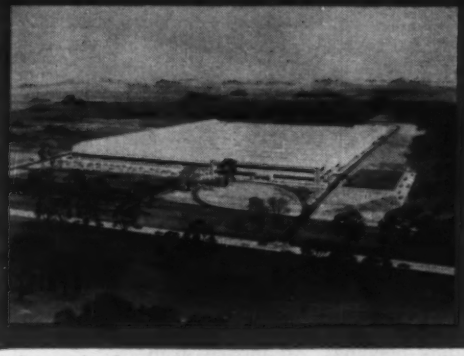

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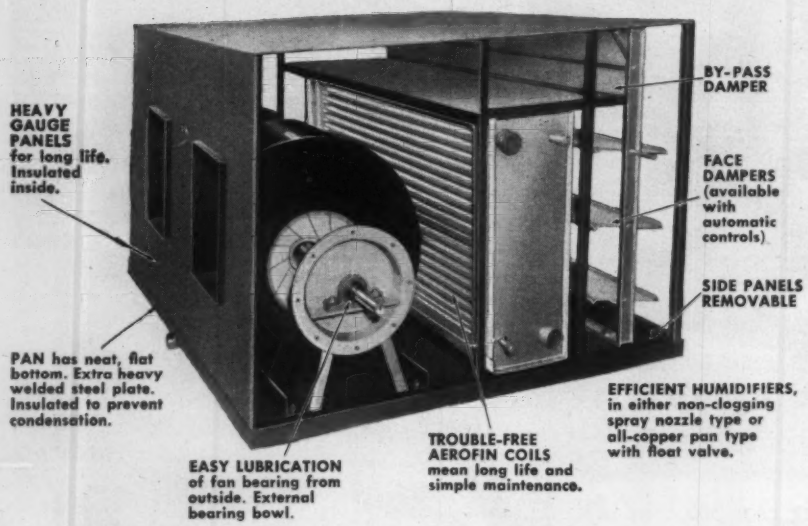
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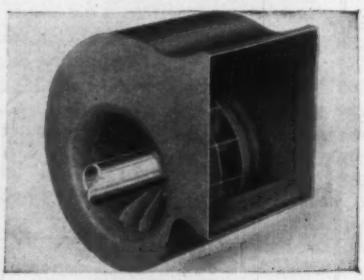

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READER COMMENT

shown by the sketches in the Dec. 23 discussion.

In a region of bi-axial stress, the second stress must be considered. If compressive, it should augment the bond; if tensile and of sufficient magnitude to exceed the tensile strength of the concrete, it will crack the concrete parallel to the splice. A comparison of the original design sketch and the photograph of the failure shows that such cracking can develop.

"Intermeshing" the vertical and bent bars would offer little increase in resistance. As indicated in the recommended detail in Rigid Frame Bridge, p. 55, "ACI Manual of Standard Practice for Detailing Reinforced Concrete Structures", the bars should follow the curved trajectory of the principal tensile stress. At the edge of a triangular corner fillet, this stress is approximately 45 deg with the horizontal; the second principal stress is slightly compressive. Resolving these stresses into vertical and horizontal components will indicate both vertical and horizontal tensions.

Contrary to the implication in the Dec. 30 discussion, which states that the . . . Sketch . . . does not indicate a single unreinforced plane, there was an unreinforced section perpendicular to the horizontal tension at the splice. The failure apparently began and progressed on this section through the splice, thereafter becoming perpendicular to the principal tensile stress.

The question raised in the discussion of Dec. 30 as to the variation in bond stress properly allowable with the same factor of safety for splices in tension zones as compared with compression zones is a valid one. Its consideration should not be confused with nor based upon the failure of a splice at right angles to a large tensile stress.

PAUL F. RICE
Technical Director
American Concrete Institute
Detroit, Mich.

Toll Roads in Texas

SIR: Your story "Texas Toll Roads", (ENR Feb. 24, 1955, p. 26), contains an incorrect statement. The fourth paragraph of the article states that bids have been taken on two sections of the Fort Worth-Dallas toll road, listing the contractors and the amount of the bid. For your information bids have been taken on no construction contracts on the Dallas-Fort Worth Turnpike.

Complete detailed construction plans are being prepared at this time

(*Continued on page 14*)

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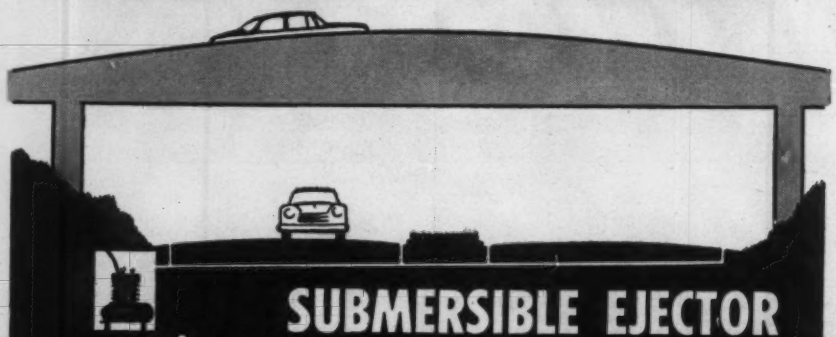

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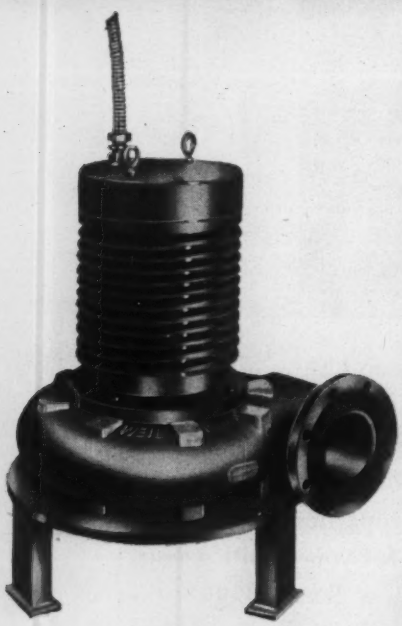

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READER COMMENT

on the Dallas-Fort Worth project, but it is not anticipated that the Texas Turnpike Authority will be in position to take bids on this work until mid-summer, 1955.

Yours very truly,

J. C. DINGWALL
Engineer-Manager
Texas Turnpike Authority
Austin

[EDITOR'S NOTE: ENR's writers, bemused, no doubt, by the multiplicity of turnpike plans and builders in Texas, were guilty of several errors in the story Mr. Dingwall refers to. For the record, these are the facts:

1. Mr. Dingwall is correct—no construction work is afoot on the planned Fort Worth-Dallas road, which will be the exclusive work of the Texas Turnpike Authority.

2. Neither the planned Dallas-Houston road (of the privately financed Texas Turnpike Co.) nor the planned Dallas-San Antonio road (of the privately-financed Sam Houston Turnpike Corp.) actually will go to Dallas. Both will start from a point on the proposed Dallas-Fort Worth road nearly midway between the two cities.

3. The Texas Turnpike Co. has received bids for two sections of its road to Houston from a group of contractors headed by Farnsworth and Chambers Co. Inc. of Houston; and has received bids on the remainder of the road from a combine headed by H. B. Zachry of Houston.

4. The Sam Houston Turnpike Corp. has received bids only for grubbing and clearing on its road toward San Antonio, no construction contracts.]

CALENDAR

Southern Municipal and Industrial Waste Conference, College of Engineering, Duke University, Durham, N. C., March 31-April 1.

Michigan Engineering Society, annual convention, The Cranbrook School, Bloomfield Hills, Mich., April 1-2.

Regional Construction Conference, sponsored by the Cleveland Engineering Society, Cleveland, Ohio, April 11.

Wire Reinforcement Institute, Inc., spring meeting, The Greenbrier, White Sulphur Springs, W. Va., April 11-13.

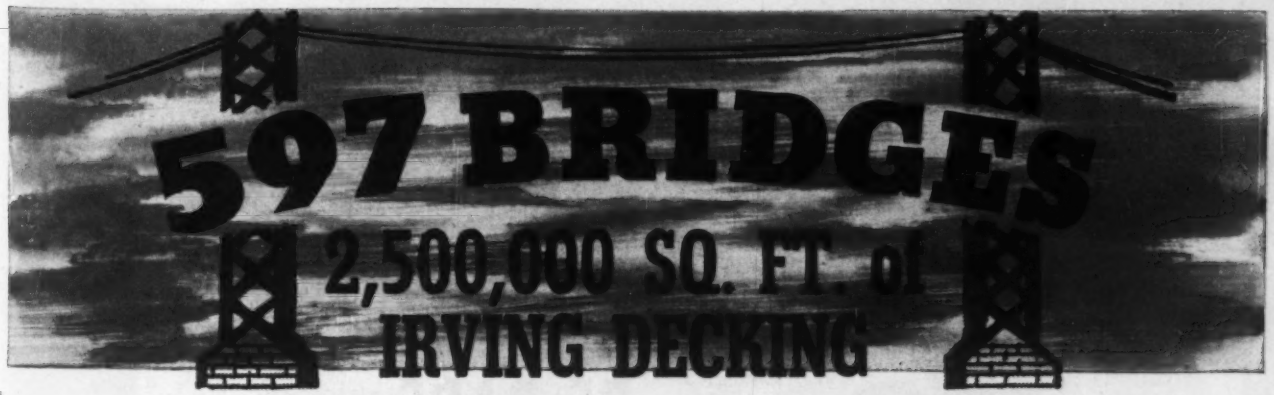
Concrete Reinforcing Steel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., April 11-16.

Conference on Biological Waste Treatment, Manhattan College, New York City, April 13-15.

American Wood-Preservers' Association, annual meeting, Hotel Jefferson, St. Louis, Mo., April 13-15.

Society of Automotive Engineers, Central Illinois Section, Earthmoving Industry Conference, Peoria, Ill., April 13-14.

National Engineering Conference of the American Institute of Steel Construction, Hotel Muehlebach, Kansas City, Mo., April 18-19.



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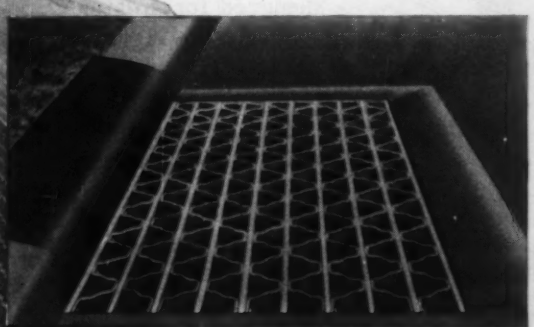

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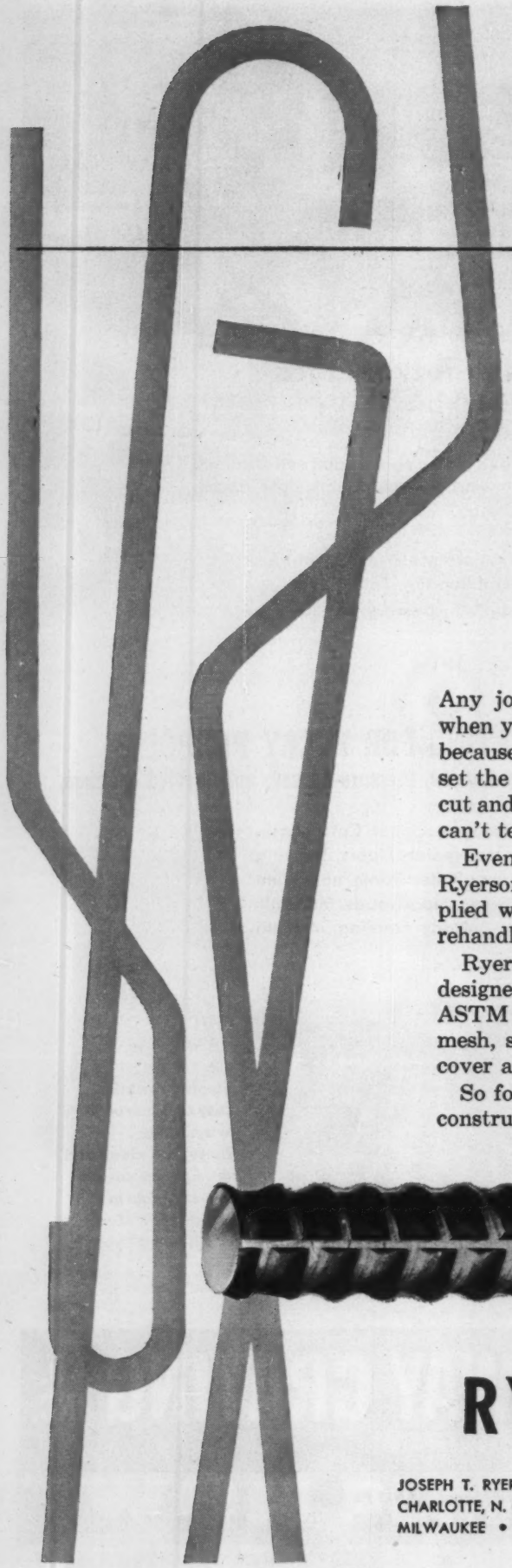

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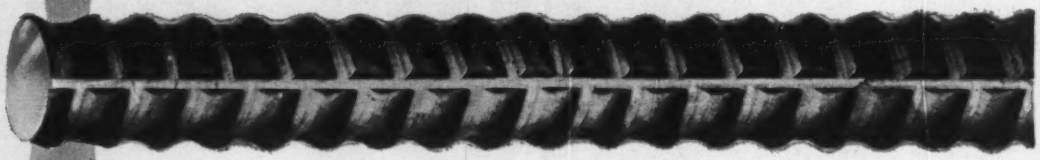

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CONTENTS

NATIONAL AFFAIRS

What Do You Do When Competition Pinches? 21
House Votes Funds for Roads, Schools 22
Opposition to President's Highway Plan Mounts .. 23
Springs Wash Out Thruway Embankment 24
Bids Called for "Dry Land" Bridge 24
Dallas Plans Airport With Passenger Appeal 25
AREA Annual Convention Expects Cheaper, Faster Services 26
Big Booms Speed Work on Apartments 26
Washington State Agency to Arrange Turnpike Financing 26
Big Pumping Plant Goes Into Operation 27

FEATURES

Hidden-Arch Space-Frame Spans Gym 35
For Better Control in Sludge Digestion 39
Oregon's Portland-Salem Freeway 43
Photographs of Models in Place of Drawings 47

NEW PRODUCTS

Insulation Boards Have Triple Purpose 53
.25 Caliber Power Tool Weighs 6 Lb, Is 13-In. Long 53
Water Can and Cooler Line Said to Give Long Service 54
A-C Scraper Is Heavy on Horsepower 54
Room Air Conditioner Can Be Built Into Wall 58
Pre-Mixing Grout and Mortar Takes Out Guesswork 59
Patching Material Usable on Any Clean Surface 59

INTERNATIONAL

Tunnel on Piles for Scotland's Forth 60
U. S. Puts $23 Million Toward Egyptian Projects .. 60

MEN AND JOBS

George C. Koss Heads AGC 62
American Bridge Division Names Vice President 62
N. E. Argraves Assumes Connecticut Highway Duties 62
Michigan Highway Engineer Named Deputy Commissioner 64

BUSINESS AND FINANCE

Texas Builder Starts $400-Million Home Tract 93
Business Construction Plans Are Up for 1955 93
Alcan Plans to Double Kitimat Aluminum Capacity .. 93
Concrete Pole Developed for Transmission Lines ... 93
Detroit Area May Get $45-Million Atomic Plant 94
Legalities Delay Financing of 3 Toll Projects 94
Activity This Week 94

LABOR

Can Anti-Trust Laws Touch Labor? 96
Senate Opens NLRB Gates 96
Airbase Construction Hit by Overtime Pay Dispute .. 96
Labor Briefs 98

Reader Comment 8
Calendar 14
Washington Observer .. 19
City by City 30
Weather 50
Obituaries 68
Legal 71
Construction Reports .. 74
Unit Prices 88
Editorials 112

THE CONSTRUCTION WEEK

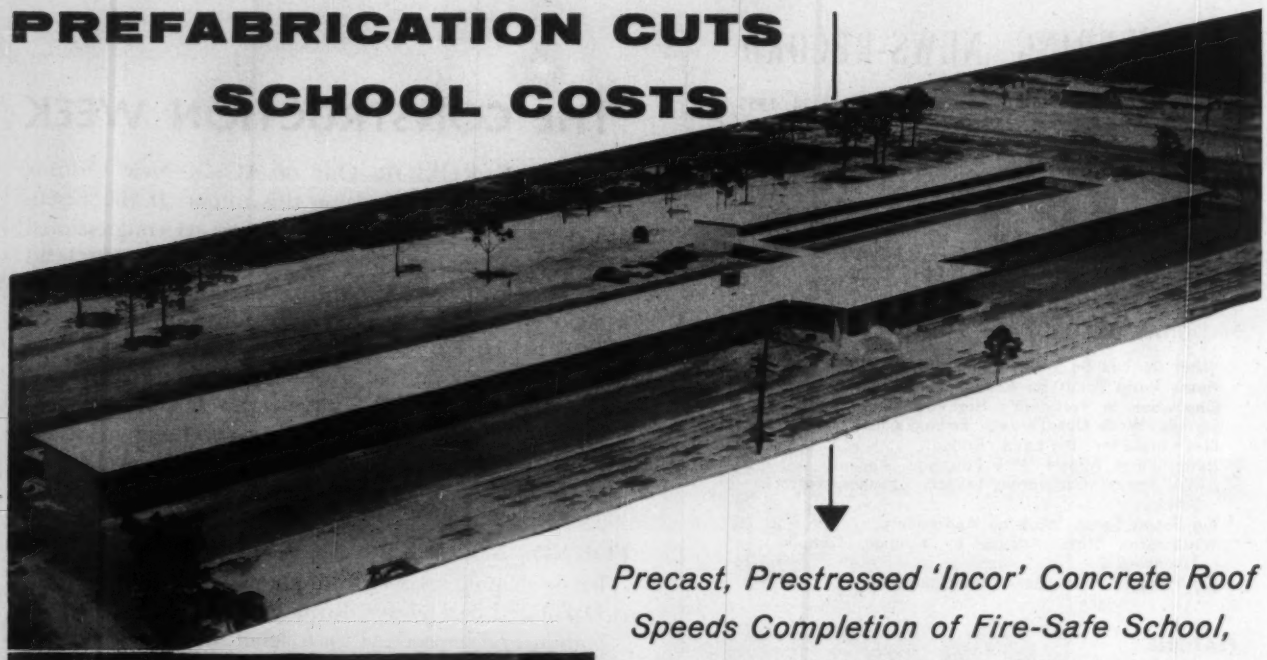
HIGHWAY RUMOR—Out of AGC's New Orleans convention last week came this rumor: If the Eisenhower highway program manages to get congressional ok, Gov. Robert Kennon of Louisiana is in line to head the proposed federal bond issuing agency that would finance the interstate program. Circumstances favoring the choice of Kennon: he chairmanned the governors' committee that pushed the President's recommendations; by Louisiana law he can't succeed himself as governor; and, as an anti-Long man, his chances of getting to the U.S. Senate or on the state's high court are considered slim by local politicos.

FOUND: 200,000 KW—There may be an inter-agency hassle shaping up over future power capacity for South Dakota. Local power disributors see a 1958 shortage coming and have asked for federal steam power, which presumably might be provided by the Bureau of Reclamation. But, Sen. Karl Mundt (Rep., S.D.), on the basis of a report he requested from the Army Engineers, has revealed that planned hydro sources may be made to yield 200,000 kw additional power or just about the capacity of a steam plant U.S.B.R. might build. The Missouri Basin's Oahe Dam, now under construction, looks good for 75,000 kw more than the planned 425,000 kw as a result of a re-evaluation of its generating facilities. A relocation and redesign of the proposed Big Ben Dam, near Pierre, offers prospects of over 100,000 kw more than planned.

CHEAPER AT LOCAL LEVEL—Local groups that ordinarily would look to the Bureau of Reclamation to build their irrigation projects may get an opportunity to construct the projects themselves with Bureau funds. Legislation to this end has breezed through the House without a dissenting vote and appears to have smooth sailing in the Senate. Money appropriated by Congress would be made available to local irrigation districts interest-free, same as it is now to the Bureau. Thinking is that local groups could make available funds go further by not having to figure Bureau overhead and design services in the cost of their projects. Several California districts already have shown interest in taking advantage of the legislation.

ON SPANISH BASE DELAY—Navy's CEC chief Rear Adm. J. R. Perry left no doubt in the minds of those attending the AGC convention as to who he feels is to blame for reported delays in building the airbases in Spain. Said Adm. Perry (under questioning from the floor): "When I get the land on which to build, I assure you the bases will be built." His implication was clear enough—construction is the Navy's business, but land acquisition is a problem for the Air Force.

PREFABRICATION CUTS SCHOOL COSTS



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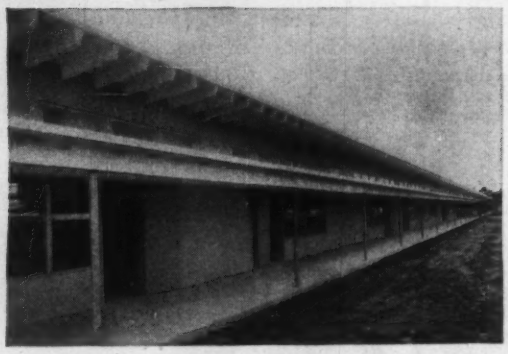

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WASHINGTON OBSERVER

The slowdown in public works programs in Congress is getting critical. Disputes over "how to do it" between Republicans and Democrats are dashing the high hopes of the Administration—on highways, schools, public works of all kinds. All are in the doubtful column, and it will take some action by the President to change things.

•

The situation is confused—more so than the usual Washington issue. The Administration, in its legislative program and its economic prescription for prosperity, laid great emphasis on construction. And the Democrats in their own diagnosis last week—the report of the Joint Committee on the Economic Report—urged more federally inspired and financed building.

But guessing now is that new highway legislation is dead. Neither Republican nor Democratic congressmen like Eisenhower's program; and Democrats are inclined to save highway money for election year. House leaders still are trying to keep the program alive (see page 23).

•

School construction aid is running into trouble. Eisenhower's program met with disapproval in Congress, but the Democrats thought they had a grant-in-aid scheme that would work. But now Republicans are threatening to block the Democratic approach.

Colorado River storage legislation is getting bitter opposition. There are votes enough in the Senate to pass the Eisenhower package; but the House still is far from being won over.

•

The Administration is keeping up its confidence. The President expects to go on supporting his whole program; and congressional leaders feel that, with enough effort, he may get some of his program across.

But highways will be delayed, it seems sure, until next year.

•

Eisenhower's remarks on high dams vs. low dams agitated construction officials in Washington. The President has been regarded as a pretty good partisan of the whole idea of upstream water and soil conservation.

The President gave a big plug to the groups fighting high dams when in his press conference he spoke very favorably of a book called "High Dam, Foolishness," by an Oklahoma newspaperman, Elmer Peterson.

Water is rapidly becoming our most precious natural resource, the President said—if it is not already.

Eisenhower said he had read Peterson's book and described its point as this: that many of our big dams had been constructed under a false conception.

•

The Corps of Engineers, for one, is considerably disturbed by the advances being made by the groups who argue that federal money should be spent mainly "to keep the raindrops where they fall."

The Engineers have plenty of ammunition for their side—details showing how dams to control the flow of rivers have saved millions of dollars and prevented industrial shutdowns by letting water out of storage reservoirs to keep rivers running when otherwise they'd run dry.

But the proponents of river control by dams have had a hard time getting their story across in the Administration, they think.

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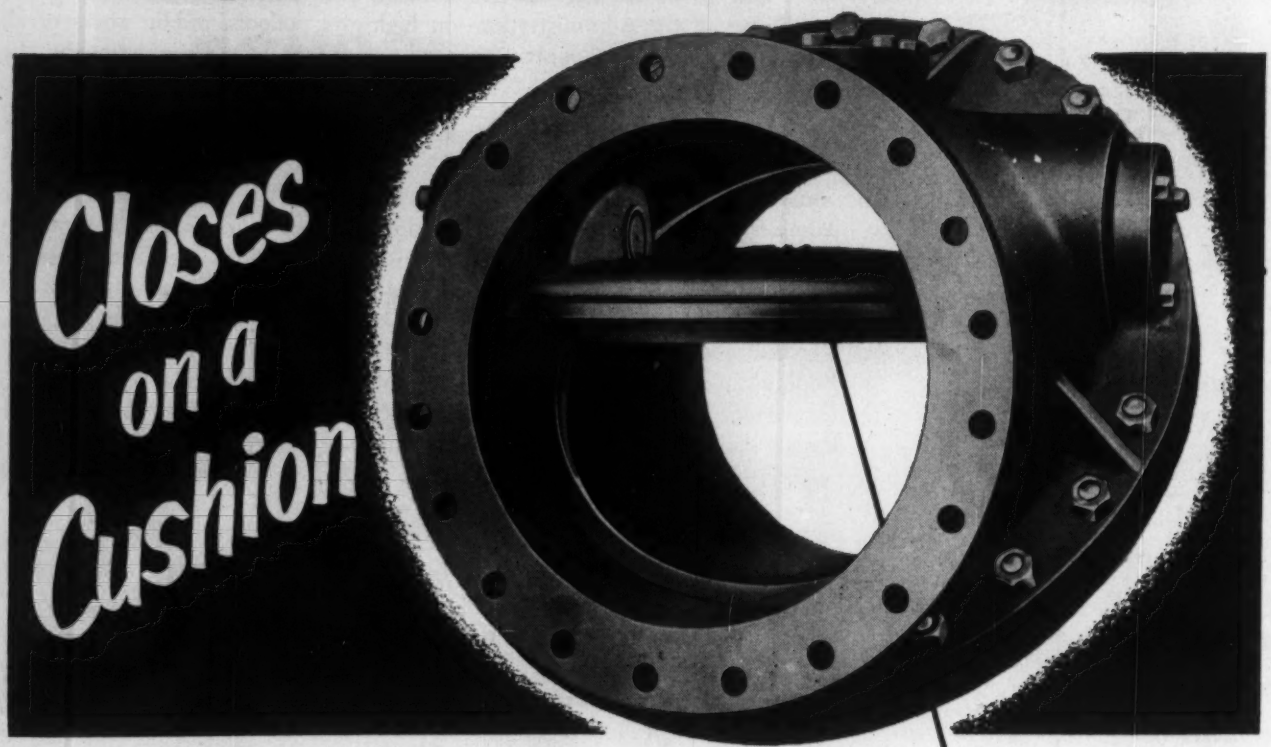

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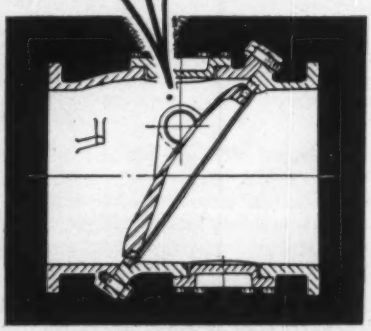

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AGC Meeting Discusses:

What Do You Do When Competition Pinches?

Eugene E. Halmos, Jr.
Managing Editor

The key word for contractors is: Competition.

Whether they come from Milwaukee or Daytona Beach, from New York or San Diego—and they came from all those cities and many more to attend the annual meeting of the Associated General Contractors in New Orleans last week—talk about competition dominated their conversations.

The four-day AGC meeting produced much of interest to the construction industry. There were discussions of federal contract requirements, safety, apprenticeship programs, the President's grand plan for highways, the intricacies of contract forms and troubles with subcontractors.

But competition was the theme that ran through every session, every backroom discussion, every dinner table conversation.

• **Not worried**—It isn't that contractors are particularly worried about the state of the construction industry; they aren't. Most of them expressed quiet satisfaction—or a bit more—with the way things are going for active builders of all kinds.

The question constantly in the foreground was how long any industry can stand the type of cut-throat competition that the construction industry is experiencing without damage to itself, its product and its reputation with the buying public.

The contractors, in session after session, heard proof that their industry is more robust than ever before. They knew that construction is doing more business than ever before, and that the industry's capacity has increased enough to permit a comfortable view of almost any imaginable jump in the volume of construction business.

• **But concerned**—Concern, is the right word to describe how contractors feel about the condition of the construction industry.

You can get as many shadings of opinion as there are contractors on how long the situation will continue, and why. But there's not much division over why it exists. Most contractors agree that the industry got highly competitive because of the many builders who broke into the business during and immediately after World War II, grew fast on cost-plus contracts and invested heavily in capital equipment and machinery.

These firms, say AGC members almost unanimously, include comparatively few who have every right to stay in the business. A great many more started with little knowledge of the construction industry—and haven't learned much since.

Now, driven by their heavy financial commitments, they're fighting desperately to stay in business—even if it means taking some jobs at a loss. That loss may be less than equipment depreciation costs.

• **Answer**—Most contractors agree that the answer is good management. "You can't just get on the merry-go-round yourself," one contractor said. "You can't afford to delude yourself that all your experience, all your years of figuring, are entirely wrong—and having done that, throw in a couple of real low bids yourself."

"The answer has to be that there is a difference between good management and bad, and that the good management will come out on top—perhaps, after a painful shakeout period."

• **Ties in**—As usual, AGC members listened to outside speakers for two of the four days. They got down to their own problems on the third day where their general sessions broke up into the three traditional groups—buildings, heavy construction and highways.

The theme in these working sessions—reflected in the carefully considered reports of the committees and in the comments from the floor—again was competition.

Behind the acid comments on the perennial problem of subcontractor relations, for instance, was the belief that any formal legislation to force

NEW AGC PRESIDENT George C. Koss (second from right) receives congratulations from vice president Frank J. Rooney. Managing director H. E. Foreman (left) and outgoing president John MacLeod (right) look on.

. . . Report on AGC meeting

the acceptance of the lowest apparent sub-bid might take the general contractor out of the competitive running.

Not that the generals don't want to play fair with their subs—their code of ethics is evidence that they do. But they are convinced that any law that makes it difficult to use their best judgment as to a sub's qualifications may put them in a bad competitive position.

A lot of thinking on relations with subs boiled down to this: Put those relations on a local, personal basis—not even a state basis, let alone federal.

• **Other ties**—The theme of competition also ran through the urgings from AGC's Washington staff to complete the necessary forms for up-to-date data for the independent Bureau of Contract Information, an AGC-sponsored organization that provides financial information of interest to contracting firms and buyers of construction.

It ran through the highway section meeting where speakers called attention to the fact that contractors still are working at only about half their actual capacity and have ample means to double the amount of work they now are doing.

It ran through the discussion of labor problems in general. Contractors seemed much less worried about negotiations with their own labor forces than with the possible application of what they consider hampering federal legislation to their operations (changes in the Davis-Bacon Act, for example).

• **Help for the builder**—Rear Adm. J. R. Perry, chief of the Navy's Bureau of Yards and Docks, and Brigadier Gen. D. H. Tulley, assistant chief of Army Engineers for military construction, both had some kind words—and some sharp ones, too—for the contractors.

Said Adm. Perry: "As most of you know, there is at present no clause or provision in our contracts for a price adjustment in the event of unforeseen government interruption or suspension of work. This lack of an avenue of relief for the contractor . . . imposes on him a risk which I believe we . . . are obligated to eliminate.

"The means by which we in the Navy propose to eliminate this risk is through . . . a new 'delays damages' clause. This clause . . . would provide that if unforeseen . . . interruptions or suspensions of work should occur such as to cause an increase in the contractor's cost of performance, an equitable adjustment would be made in the contracting price and the contract modified in writing accordingly."

Said Gen. Tulley, "we tried a policy of letting firms bid on alternate designs in competition with government standard designs. Our experiences under this policy proved that we must seek further for a solution. The savings at best were small, consisting largely of reductions of standards and not amounting to enough to compensate the government for the cost of evaluating alternatives, settling disputes and making awards.

"Now we have abandoned the alternative design policy and rely on the experience of our staff to decide the feasibility of including optional materials or methods on projects."

• **For the future**—W. A. Dexheimer, Reclamation Commissioner, devoted his speech to a review of his Bureau's latest projects—and to pointing up matters in legislation now being considered in Washington that forecast more business.

One of these, Dexheimer said, is what he called the small projects bill which would authorize the bureau to make loans to local groups for development of irrigation systems.

The present limitation in this bill is $5 million for a single project. The commissioner said the bill should stimulate local planning and development of smaller projects.

Louisiana's Gov. Robert Kennon, who was chairman of the Governors' Conference committee on highways, surprised the crowd—and drew heavy applause—with the statement that he favors the Administration highway program and is opposed to the alternate roadbuilding proposal put forward by Sen. Albert Gore, Tennessee Democrat. Sen. Gore's bill would double current federal appropriations for highway construction.

"You can't get highways built by simply increasing appropriations," Gov. Kennon said. "The doubling or tripling of funds for highways by action of Congress isn't the answer. The answer has to be concentration on the interstate network; it has to be done by having the money on tap when needed—not right now.

His speech was warmly endorsed—in and out of the meeting—by highway builders. Most of them were quick to make the point that their biggest worry was not the immediate availability of government funds for roadbuilding but the continuing availability that would make possible orderly planning of work, expenditures and construction.

House Votes Funds

First appropriation bill of this session contains money for roads, schools

The House of Representatives this week passed and sent to the Senate the first of the annual flood of bills in which Congress votes money for construction.

The bill, called the "Second Supplemental Appropriation Bill" would make available $163 million for several agencies. The largest sum in the bill is $90 million for the federal-aid highway program. This money will be used to reimburse the states for the federal share of work done on projects previously authorized.

Congress last session appropriated $500 million for the program. The amount in the supplemental bill brings the total for the current fiscal year to $590 million.

The bill also provides $3 million for forest highways. This supplements the $15 million voted last session. Also included in this section of the bill is $750,000 for added contract payments for work done on approved public lands highway projects.

Another major item in the bill is an appropriation of approximately $70 million for school construction in federally impacted areas. This breaks down into an appropriation of $48.5 million in new funds plus a re-appropriation of $21.5 million of funds previously approved but not obligated.

Legislation passed in the last session provides for federal assistance to school districts where federal government activities have boosted school enrollment. The total program is estimated to cost $94 million.

Other funds for school and hospital construction were provided in an appropriation bill for the Department of Health, Education and Welfare approved last week by the House Appropriations Committee.

This bill calls for $24 million during the 1956 fiscal year to round out school construction in federally impacted areas.

It also provides $96 million for hospital construction grants, a reduction of $29 million below the $125 million requested. The amount approved by the committee would provide $75 million for hospitals and $21 million for diagnostic centers, rehabilitation facilities and nursing homes.

The committee approved $743,500 for air pollution and water pollution control research. But it knocked out a request for $1 million for grants to the states for enforcement of the Water Pollution Control Act.

Opposition to President's Highway Plan Mounts

President Eisenhower's "Grand Plan for Highways" took another body blow in hearings before the Senate subcommittee on roads, last week.

Probably the most damaging attack yet on the $101-billion Administration highway program was delivered by Sen. Harry Byrd of Virginia, the chairman of the Senate Finance Committee.

Sen. Byrd is the Democrat the Administration would like most to have behind the roadbuilding program. His strong opposition practically elminates any chance for Senate approval this year of anything like the Administration bill.

About the only chance that remains now, highway officials say, is to get action in the House of Representatives on a highway bill that the Senate could not ignore. That is a slender hope at best. House committee members estimate that six weeks of hearings would be necessary. And in the House, too, the Administration bill is likely to run into the same kind of opposition that Sen. Byrd spelled out before the Senate roads subcommittee.

• **Financing plan is target**—Sen. Byrd led off by citing the history of federal highway aid to show that present policy is capable of expanding and improving the nation's road network. He assailed the Administration bill on a dozen major points.

First, he said, the bill would "destroy sound budgetary procedure and take the longest step yet toward concentrating power in the federal government." For the interstate system, he declared, it would abolish the state matching formula, turn 40,000 mi over to federal control, and give large windfall refunds to certain states.

Sen. Byrd also declared the Administration bill would dry up the gasoline tax for improvement of the interstate system for 32 years on the false assumption that interstate roads would need no further improvement from the time the 10-year construction period was over until the bonds had been paid off.

His main shafts, however, were aimed at the bond financing proposal. He attacked the idea of a government corporation authorized to borrow $21 billion for 32 years. The interest cost, he noted, would be $11.5 billion or 55% of the funds borrowed —money that could better be used to build roads.

Finally, Byrd assailed the proposal to pay off the bonds with "permanent indefinite appropriations" which would remove the corporation from appropriation control by Congress.

In substance, the Senator from Virginia told the committee, the Administration bill attempts to convert the federal tax on gasoline, originally imposed as a temporary tax for general revenue purposes, "into a permanent special tax, irrevocably dedicated to a single specified purpose."

Sen. Byrd's statement wrapped up in one package most of the criticism and questions that have been leveled at the Administration bill.

But the subcommittee has plans for further study both of the Administration measure and an alternate bill introduced by its chairman, Sen. Albert Gore of Tenn. The Senate is voting funds to permit the subcommitee to hold public hearings in the nine districts of the Bureau of Public Roads. These hearings can delay action indefinitely, putting off Senate consideration of a highway bill until next year.

• **BPR's breakdown**—At the subcommittee's request, BPR submitted a breakdown of total highway needs for each state (see table).

BPR also listed the approximate amount of federal funds that would be available to the various states under the 10-year Administration plan, which includes $25 billion for interstate construction, $6 billion in federal-aid grants and $225 million for forest roads.

Federal funds would take care of slightly more than $31 billion. The remainder, nearly $70 billion, would be the responsibility of state and local governments.

How States Share in 10-Year Road Program

Bureau of Public Roads figures show how the federal government and the states would share the cost of President Eisenhower's $101-billion highway building program.

	Total program (figures in thousands of dollars)	State share	Federal share
Ala.	$ 2,053,942	$ 1,535,942	$ 518,000
Ariz.	656,467	330,467	326,000
Ark.	1,085,436	776,436	315,000
Calif.	8,209,856	5,332,856	2,877,000
Colo.	1,448,936	1,165,936	283,000
Conn.	2,054,000	1,398,000	656,000
Del.	306,578	211,578	95,000
Fla.	2,029,384	1,391,384	638,000
Ga.	2,257,466	1,347,466	910,000
Idaho	567,596	363,596	204,000
Ill.	4,476,715	3,092,715	1,384,000
Ind.	4,205,393	3,114,393	1,091,000
Iowa	2,487,026	2,060,026	427,000
Kan.	1,660,619	1,309,619	351,000
Ky.	1,937,000	1,290,000	647,000
La.	1,562,216	929,216	633,000
Me.	870,520	666,520	204,000
Md.	1,524,600	992,600	532,000
Mass.	2,447,669	1,444,669	1,003,000
Mich.	6,701,204	5,092,204	1,609,000
Minn.	1,649,233	975,233	674,000
Miss.	922,521	554,521	368,000
Mo.	2,531,753	1,713,753	818,000
Mont.	748,132	460,132	288,000
Neb.	821,558	606,558	215,000
Nev.	221,042	68,042	153,000
N. H.	557,948	461,948	96,000
N. J.	4,623,606	3,037,606	1,586,000
N. M.	1,007,266	654,266	353,000
N. Y.	6,425,800	4,695,800	1,730,000
N. C.	1,216,618	810,618	406,000
N. D.	483,085	294,085	189,000
Ohio	5,036,192	3,335,192	1,701,000
Okla.	1,593,547	1,065,547	528,000
Ore.	1,072,100	593,100	479,000
Pa.	5,713,069	4,663,069	1,050,000
R. I.	485,623	323,623	162,000
S. C.	589,207	314,207	275,000
S. D.	524,508	338,508	186,000
Tenn.	1,799,690	1,263,690	536,000
Tex.	3,675,390	2,377,390	1,298,000
Utah	632,687	297,687	335,000
Vt.	472,301	252,301	220,000
Va.	1,757,910	1,020,910	737,000
Wash.	1,967,957	1,343,957	624,000
W. Va.	1,779,750	1,432,750	347,000
Wis.	2,384,875	1,903,875	481,000
Wyo.	831,407	428,407	403,000
Hawaii	185,004	156,004	29,000
D. C.	324,681	128,681	196,000
P. Rico	281,230	242,230	39,000
Total	$100,804,413	$69,599,413	$31,205,000

BACKFILLING under the pavement slab moved ahead quickly.

Springs Wash out Thruway Embankment

An oddity among highway mishaps was the recent washout of an embankment on the New York Thruway two miles west of Albany (ENR March 3, p. 130,

Source of the trouble proved to be a group of small springs which, when swollen by heavy snows and rains of the season, slowly started eating out the moisture-saturated toe of the embankment.

The undisturbed soil—the bank is not a fill, but actually the sharp slope of a ravine in a shallow cut section of the thruway—washed out in a narrow slice about 20 ft wide and up to 30 ft deep under the pavement slab. The soil in the area is primarily fine sand with some clay.

Eating away at the toe, the springs at the bottom of the ravine undermined the discharge end of a large concrete drainpipe running out to the face of the embankment from a catch basin lying under the outer shoulder of the outside strip of dual highway. When no longer supported, the end of the concrete pipe broke off, and water from the catch basin ran through the embankment, eating soil away rapidly.

Another catch basin, under the median strip of the Thruway, discharged into the basin under the shoulder, so that a large volume of water was present. As the slope washed out, more and more of the concrete drain broke off, and the washout quickly ran in under the pavement slab.

Traffic was routed over the median strip while the huge cavity was backfilled. A flexible metal drainpipe, now runs out to the face of the embankment from the catch basin under the median strip. The outside catch basin has been eliminated. A heavy rock berm has been placed along the face of the slope to protect against further washouts.

To get good compaction under the undermined highway slab in the backfill, engineers employed mud-jacking with six parts of mud to one of cement. The slurry solution was injected through holes drilled in the pavement until it began running out of adjacent holes.

The concrete pavement slab, even where completely undermined deflected less than 0.01 in. Traffic was allowed back on the pavement while the mud-jacking operation was going on and as soon as the last of the backfill was in place.

Dam Completed

The last concrete was poured this month on the $17-million Box Canyon Dam on the Pend Oreille River in Washington. Cofferdam removal will be completed before the end of this month, and first power will be produced in April. The dam is a project of Pend Oreille County Public Utility District No. 1.

The Morrison-Knudsen Construction Co. is general contractor for the project.

"Dry Land" Bridge

Engineers call for bids on pilot channel to put river under dry bridge

Army Engineers last week invited bids on the work that this fall—a full season earlier than had been expected—will put the Missouri River under the "dry land" bridge at Decatur, Neb.

The work, on which bids will be opened April 8, calls for excavating a pilot channel 10,800 ft long and 80 ft wide, involving removal of 756,000 cu yd of earth and 724,000 cu yd of dredging.

The pilot channel is to lead the river under the bridge. Scour of the river is expected to enlarge the channel to 600 ft in subsequent seasons. The dredging is to remove a false point and widen the channel to insure that it will carry runs of ice without gorging.

The speedup results from the fact that two contractors on the project both are ahead of schedule. Condon-Kiewit Co. of Omaha and Connor-Stavely Co. of Kansas City, Mo., are shaping up and fastening down the river upstream to point it so that it can be led under the bridge by the pilot channel. Both firms elected to work through the winter with no seasonal shutdown.

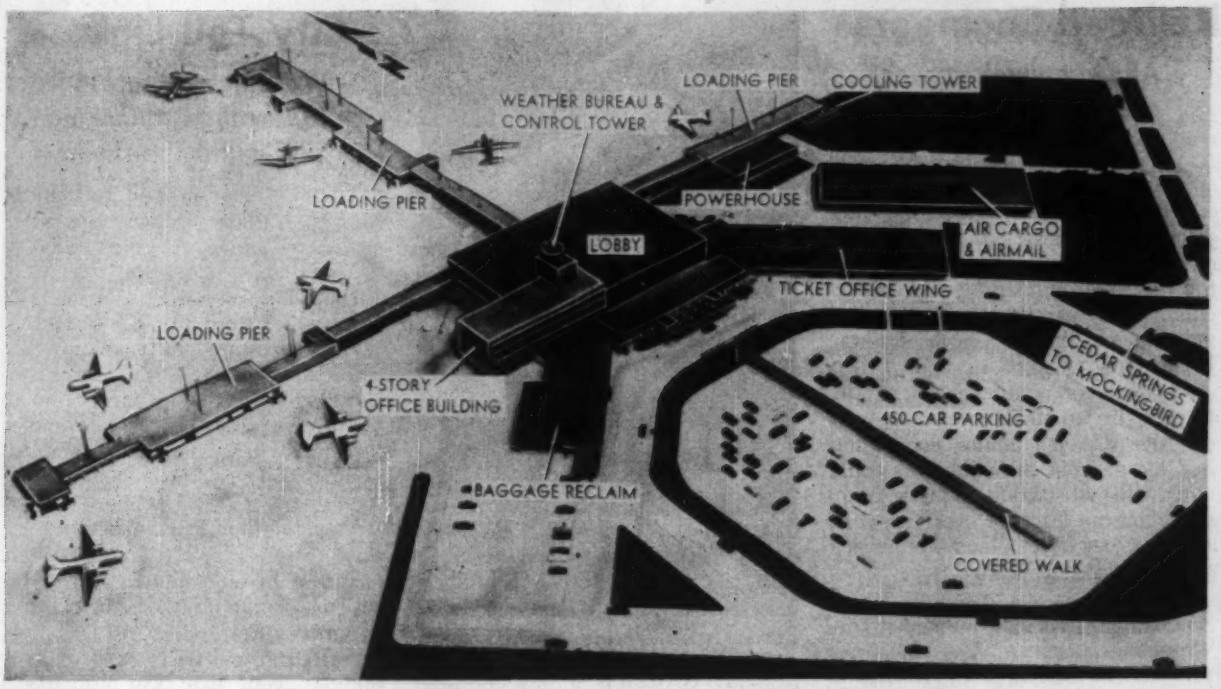
The river broke out of its channel and moved one-third mile to the east in 1946. In 1950 the Burt County Bridge Commission built the bridge where the river was supposed to be, anticipating that the river would be moved back. Congress balked at funds until 1954. The bridge, which cost $1,970,000, will connect Decatur with Onawa, Ia.

Indiana Orders Re-Survey Of North-South Toll Road

The Indiana Toll Road Commission has decided to order a re-survey of its proposed north-south Chicago-Indianapolis toll road.

The commission has in mind a route from the Chicago area to a point east of Indianapolis in place of the projected route, which would pass west of Lafayette and end northwest of Indianapolis.

Albert J. Wedeking, executive director of the commission, will open negotiations with the three firms which made the original traffic and engineering studies for the north-south turnpike. They are J. E. Griener Co., Baltimore; Wilbur Smith & Associates, New Haven, Conn.; and Parsons, Brinkerhoff, Hall & Macdonald, New York.



LOVE FIELD designers put emphasis on providing for the convenience of air travelers.

Dallas Plans Airport With Passenger Appeal

Dallas, Texas, is planning a quick construction start on its $5 million Love Field Terminal which will be by far the largest air terminal in the southwest.

Construction plans will be off the drawing boards this month. The Dallas City Council plans to call for construction bids in April and to let the contract in late May or early June.

The new terminal will be large enough to handle at least twice the present number of air passengers flowing through Dallas, city officials said. In addition, it is designed so that facilities for ticket counters, baggage, air mail and freight may be easily and economically expanded.

Dallas architects Tom Broad, Donald Nelson and Jack Corgan designed the terminal. Their plans give a high priority to the convenience of air travelers. It is said that it will be the first terminal in the world to carry passengers to and from planes by means of moving sidewalks.

• **One level**—The new terminal will be T-shaped, with the stem of the T—one of the loading piers—pointing directly north. It will measure 1,700 ft from the end of the west loading pier across the lobby to the end of the east pier.

It is a one level design with no stairs for the air traveler to climb. He may walk directly from the ticket counter to the moving sidewalk, or from the sidewalk to the baggage reclaim department.

The lobby will be 140x180 ft. Off the lobby will be a coffee shop with a seating capacity of 250. The main dining room will have a capacity of more than 400 and will be reached by escalators. There also will be facilities for private dining rooms.

• **Wings**—The ticket counter and baggage reclaim sections of the terminal are designed as wings extending from the lobby so as to be easily expandable. The ticket wing will be 325 ft long.

A mail and air freight building, offset from the main building between the east loading pier and the ticket wing, will keep truck operations completely separated from passenger traffic.

The dimensions of that building will be 80x390 ft.

A four-story office building for the use of airlines will be erected on stilts at the southwest end of the lobby. The airport control tower—housing weather bureau, radar, radio and other flight control facilities—will be atop the office building. Including the control tower, the terminal will be eight stories high.

In front of the terminal will be a parking lot for 450 cars. It will be depressed below the drive level to give an unobstructed view of the terminal building. A covered sidewalk, extending through the center of the parking area, will protect air travelers and visitors from the weather. An overpass will carry the automobile drive to the front entrance of the terminal over the covered sidewalk.

• **Electric eye doors**—Other features of the new terminal will be electric eye doors at all points used by air passengers, complete air conditioning and an overall design that places 20 aircraft loading gates within 700 ft of the building's front door.

Construction features include thin curtain walls for the terminal and its affiliated buildings. Brick and stone will be used only for decorative purposes, the architects said.

Zumwalt & Vinther, Dallas, will be consulting mechanical engineer for the project. Site engineer is Forrest & Cotton, Dallas. Construction Service Co., Fort Worth, built the scale model of the terminal.

Hell's Canyon Hearing

A joint hearing on Hell's Canyon legislation will be held in Idaho during the Easter recess by members of the House and Senate Interior Committees. Both committees have legislation before them calling for the construction of a single high dam by the government at the controversial site on the Snake River in Idaho. The Senate committee has before it a bill by Senator Wayne Morse of Oregon with 29 co-sponsors and the House committee is considering three identical bills on the subject.

During the trip the group will fly over the controversial Echo Park project involved in the Upper Colorado River storage project legislation, and the Trinity River power project.

Railroad Engineers

AREA annual convention expects cheaper, faster service to boost business

In view of all the furor over a federal multi-billion-dollar highway program, it was inevitable that the railroads' concern over competition from the trucking industry would be reemphasized at this year's annual meeting of the American Railway Engineering Assn.

Prospects of another boon to the truckers by no means put a damper on AREA's 54th annual convention in Chicago. For the railroaders could note with satisfaction a marked upswing in car loadings over last year, and they saw developments promising cheaper and faster service.

GEORGE M. O'ROURKE has been elected the new president of AREA.

• **Looking Ahead**—Outlining new developments, Richard G. May, vice president of the American Association of Railroads, called attention to progress in the design of specialized freight cars, particularly types for carrying intercity truck trailers.

May reviewed for his audience of nearly 1,500 U. S. and Canadian railroad men, developments in design of lighter and faster passenger cars and of lighter locomotives. He declared that electronics will provide the key to fast, safe train operation.

Track maintenance and replacement have become fully mechanized, May asserted. And any doubts as to this statement were quickly dispelled by a tour of the exhibition of railroad construction, maintenance and operating equipment in the nearby Coliseum. The exhibit was sponsored by the National Railway Appliances Assn. in conjunction with the AREA.

• **Canadian Comment**—N. R. Crump, vice president, Canadian Pacific Ry., dealt with the problem of countering competition from other forms of transportation.

"Under present competition from truck transport, pipelines, inland water and air transport, the railways no longer can afford to operate services that don't pay," Crump asserted. "They should be permitted to abandon unprofitable services and to substitute truck and bus services when needed."

• **New Officers**—G. M. O'Rourke, assistant engineer, maintenance-of-way Illinois Central R. R., Chicago, was elected president of AREA. Mr. O'Rourke has just completed his 50th year with the Illinois Central, having started with that line in 1905 as an engineering apprentice. He succeeds G. W. Miller, engineer, maintenance-of-way, Canadian Pacific Ry.

William J. Hedley, assistant chief engineer, Wabash R. R., was advanced to senior vice-president, and Ray McBrian, engineer of Denvor & Rio Grande Western R. R., was named junior vice-president.

Newly elected directors are R. H. Beeder, Santa Fe Ry.; E. J. Brown, Burlington Lines; C. J. Code, Pennsylvania R. R., and F. R. Woolford, Western Pacific R. R.

3-City Toll Link

Washington State agency to arrange financing of $227-million turnpike

The Washington State Toll Bridge Authority will begin making arrangements for financing the proposed $227-million, 65.2-mi toll road from Tacoma through Seattle to Everett.

Financial feasibility is believed to have been assured by enabling legislation just passed by the state legislature. This legislation pledges up to $5 million annually of state motor fuel taxes to guarantee payment of revenue bonds for financing the project.

Providing no legal difficulties develop, it is hoped to complete the financing by late summer and to begin construction in the spring of 1956.

Actual construction cost has been estimated at a little more than $100 million. More than $50 million will be required for right-of-way acquisition. Engineering costs are estimated at $10 million and financing costs at $33 million.

The project is scheduled for completion in 1959, when toll collections of $9.7 are anticipated. Annual toll yield is expected to increase to $28 million in 1958.

Big Booms Speed Work on Apartments

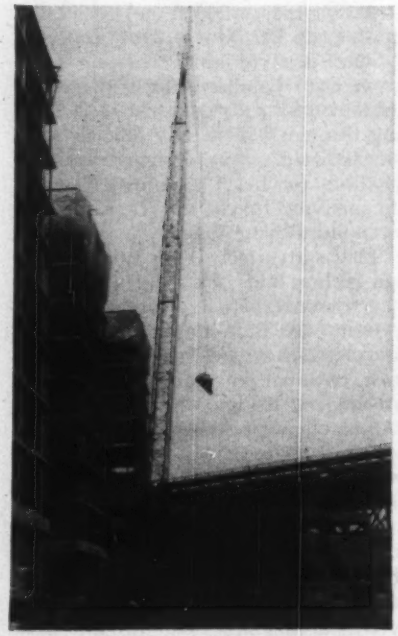
Two cranes, each equipped with 190-ft booms and 40-ft jibs are hustling construction of a $20-million cooperative apartment house in the shadow of New York's Williamsburg Bridge.

The lower Manhattan development, known as the Corlears Hook project, consists of two 21-story and two 20-story buildings of flat-plate reinforced construction—the highest of this type.

To get construction materials to the upper floors the Knickerbocker Construction Corp., subcontractors for the concrete work, purchased a pair of cranes with unusually long booms. Constructed of welded alloy steel aircraft tubing, the booms can swing a 1½ cu yd concrete bucket around an 80-ft radius. When a 40-ft jib is attached, a 1 cu yd concrete bucket can be placed within a radius of 90 ft. Total weight of boom and jib is reported to be only seven tons.

Each building consists of three cross-shaped units, with an overall length of 311 ft and maximum width of 127 ft. The cranes place 630 cu yd of concrete in a 24,000-sq ft floor.

The owners, the East River Housing Corp., are also general contractors for this group of buildings. The project was financed intially by the Ladies Garment Worker's Union. The late George W. Springsteen and Herman J. Jessor were the architects. Farkas and Barron of New York were the consulting engineers.



FIRST of the seven plants planned for southeast Florida.

Big Pumping Plant Goes Into Operation

The world's biggest low-level pumping plant was placed in operation last week by U. S. Army Engineers and the Central and Southern Florida Flood Control District.

The plant is the first of seven planned for the $300-million network of canals, levees and other works designed to control water in times of flood and droughts in 17 southeast Florida counties (ENR Apr. 22, 1954, p. 36).

It is located in the West Palm Beach Canal about midway between West Palm Beach and Belle Glade, in the heart of the Everglades. It cost $2,500,000.

The plant has six pumps. They are horizontal, axial-flow propeller pumps, each able to lift 360,000 gpm 11.1 ft. Each unit measures 116 in. at the diffusers and draws water through an elliptical intake 12 x 18 ft. Pump and frame, exclusive of suction and discharge lines, weigh 89 tons. The 106-in. cast-bronze, four-blade propeller weighs 6.7 tons.

The station is entirely self-sufficient. Each of the huge pumps is driven by a 1,600 hp opposed-piston diesel.

Hurricane damage to power transmission can cause no interruption of service at the station. To supply electricity for lighting and motor-driven auxiliary equipment, there are three 100-kw diesel generator sets.

The pumps are the product of nearly six years of planning, design, model studies and construction by Fairbanks-Morse and the Jacksonville District, U. S. Army Corps of Engineers.

This first pumping station, will effect rapid removal of direct rainfall from the highly developed truck crop, sugar cane and pasture lands tributary to the West Palm Beach Canal.

After agricultural drainage has been completed, it can be used to conduct any excess water from Lake Okeechobee to an 850,000-acre conservation area lying in Dade, Broward and Palm Beach Counties.

In times of drought, the plant can be used to pump water from the conservation area into the canals of the district network where it can be used for irrigation.

Speakers at the on-site dedication ceremony included Florida Sen. Spessard L. Holland and Maj. Gen. Samuel Sturgis, Chief of Engineers.

Texas Court's Water Ruling

The Texas Supreme Court has ruled that moving water from artesian wells through stream beds and lakes with resultant loss from seepage and evaporation is not wasteful. In a split decision, the court overruled two lower courts. The case arose over a suit against the city of Corpus Christi which is transferring water a total distance of 118 mi by natural channels to a settling basin. Evidence showed that as much as 63% to 74% of the water was lost in transfer. Lower courts had held that this constituted waste of the water.

News Briefs . . .

Construction in Alaska

Army Engineers will call for bids this spring on a $10-to-$15 million military construction program in Alaska. Bid opening for complete military installations at Unalakleet, 150 mi southeast of Nome, is set for April 21. Other complete military installations will be built at Homer, on the Kenai Peninsula; at Cape Chiniak, on Kodiak Island; at Fort Yukon, in the eastern interior; at Bethel, on Kuskokwim Bay; and at Kotzebue, on Kotzebue Sound. Completion of all six installations is scheduled for late 1956.

Building With Plastics

The Massachusetts Institute of Technology will offer a special two-week program on "Plastics in the Design of Building Products" beginning June 14. Ernest H. Huntress, director of the M.I.T. Summer Session, said the intensive program was being offered "because of the recent interest in the use of plastics in the building industry." He said it would aim at helping designers and producers "develop a thorough understanding of the materials' basic properties and of the potentialities of new engineering combinations."

Arkansas Road Jobs

The Arkansas Highway Commission has programmed two long-range highway projects expected to cost about $25.5 million. One project is a relocation of a 50-mi stretch of U. S. 61 in eastern Arkansas at a cost of $15 million. The other is construction of a $10.5-million traffic bypass route at Camden. Both projects will be built in stages.

Machine Audits Tolls

New York City's Triborough Bridge and Tunnel Authority has installed a "mechanical brain" at its central tabulating office to speed up auditing of toll collections and to save personnel. The authority is using a Remington Rand Univac "120", an office-sized electronic computer.

Baltimore Civic Center

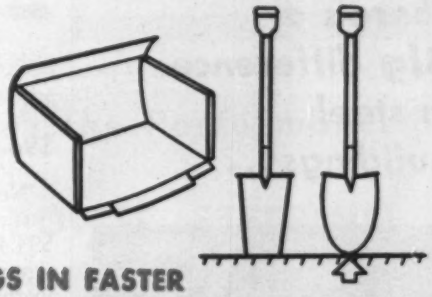
The Maryland legislature has approved and sent to the governor for signature a measure to create a Baltimore Civic Center Authority with power to issue an unlimited amount of bonds for construction of a civic center. The bonds would be paid off from receipts of the center.

5 BIG REASONS WHY ALLIS-CHALMERS move more dirt at

Watch an Allis-Chalmers scraper at work and you'll see that it loads bigger — travels and maneuvers more easily — puts more dirt right where you want it with the least tractor effort. Check features and you'll understand *why* an Allis-Chalmers scraper is able to outperform others. Then compare prices and you'll see that it gives you more scraper capacity per dollar — more for your money in every way.

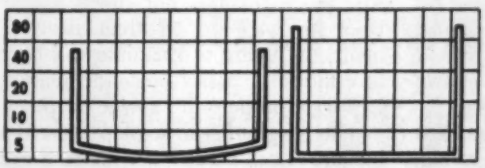
INTRODUCING THE AC-108, newest scraper in the Allis-Chalmers line — shown here with an Allis-Chalmers HD-15 Tractor. Has 8.4 struck capacity (11 yd heaped). Incorporates all of the big-yardage features that have been job-proved in the other Allis-Chalmers scrapers, 2 to 18 yds heaped capacities.

SCRAPERS
lower cost



1 DIGS IN FASTER

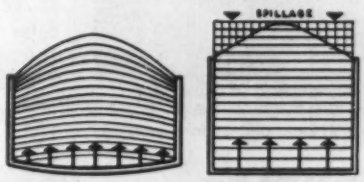
Curved and offset cutting edge on Allis-Chalmers scrapers concentrate all the tractor horsepower on the center section during initial penetration. The penetrating ability of a round-end spade helps illustrate the soundness of this Allis-Chalmers design.



2 LESS LOADING RESISTANCE

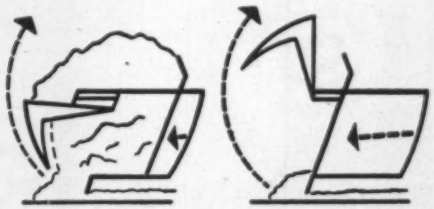
Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.

Diagrams show how an automatically heaped load avoids costly spillage even though the center is built up above the sides of the bowl.



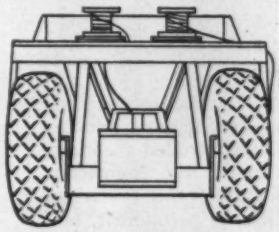
3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes foward. High apron lift prevents any possibility of material's jamming. Even when loaded from overhead, anything that can be put into the bowl can be easily ejected. Ejector returns to loading position automatically by spring action and apron weight.



5 HAULS, MANEUVERS EASILY

Big, low-pressure tires provide maximum flotation. The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points, high carrying position clears uneven ground.

Scraper main frame is shorter because exclusive linkage moves apron forward as well as upward to clear main frame at full height. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.

• • •

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CITY BY CITY

$94-Million Parking Plan

New York City—The Traffic Department is about to undertake a $94.4-million parking program designed to produce 41,500 car spaces in the next six years.

The long-range plan to help solve the city's traffic problem calls for at least 25 garages and 33 parking lots. Twenty of the garages are slated for Manhattan, two for Brooklyn, two for the Bronx, and one for Queens. There will be at least 14 lots in Brooklyn, 12 in Queens, five in the Bronx and two in Richmond.

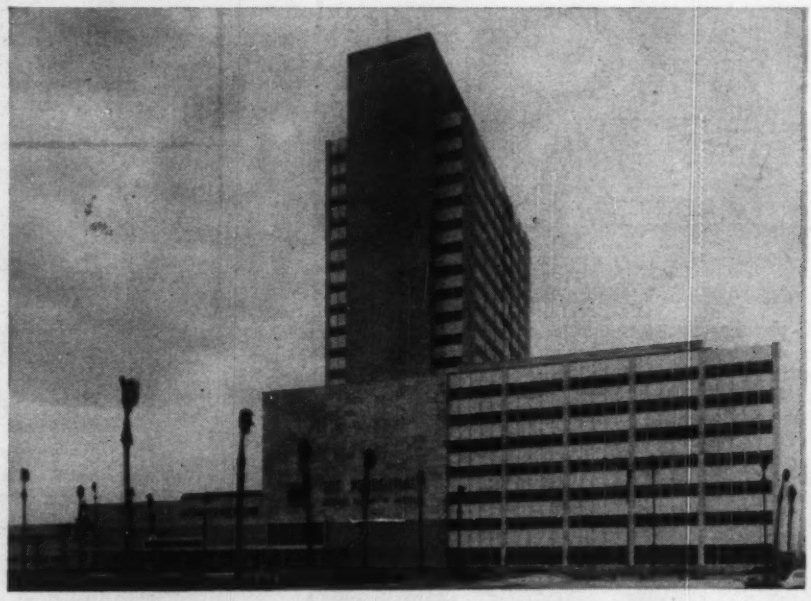
The city has allocated $6 million to get work under way this spring. Sites already have been picked for three garages and four parking lots.

A contract for the first unit—a 500-car lot on city-owned land in Sunnyside, Queens—will be awarded this week. Four other units are expected to get under way this year. They include a garage in the Civic Center of downtown Brooklyn, a garage on West 53rd St. in Manhattan, and parking lots near subway stations in Woodhaven, Queens, and Euclid Ave., Brooklyn. Another 500-car lot is scheduled for a site near a Long Island Railroad station in Jamaica, Queens.

The Traffic Department still has two hurdles to face. The City Planning Commission will have to alter zoning regulations to permit construction of a 375-car garage in the Bronx. And since there is not much vacant land suitable for off-street development, the Board of Estimate will have to establish a policy of condemnation of private property for garage purposes.

The program will not tap the city's income or call for any new taxes. Since the projects are self-liquidating, they will be financed outside the debt limit. And any deficit from off-street operations would be covered by parking-meter revenues, which are expected to total $4.3 million this year.

To meet the need for more short-term curb parking and to assure sufficient funds for the off-street pro-



Florida's Tallest Office Building Gets Final Touches

When Prudential Insurance Co. moves into its new 22-story South Central home office building early in April, it will mark another milestone in the development of Jacksonville, Fla., as the insurance center of the Southeast. (For background see ENR Jan. 14, 1954, p. 43.)

The Prudential Building—the city's first new skyscraper in about 25 years and the state's tallest office structure—towers 300 ft and has 400,000 sq ft of floor space. It occupies a 19-acre site on the south side of the St. Johns River, surrounded by a landscaped parking area for 750 cars.

Basic construction consists of a riveted steel frame, cellular steel floors with cement topping, a limestone exterior and a base of granite. Aluminum windows are set in white marble spandrels. Among the facilities is a ground floor auditorium seating 600 persons. The building was designed by Kemp, Bunch & Jackson, Jacksonville architects. General contractor is Daniel Construction Co., Greenville, S. C.

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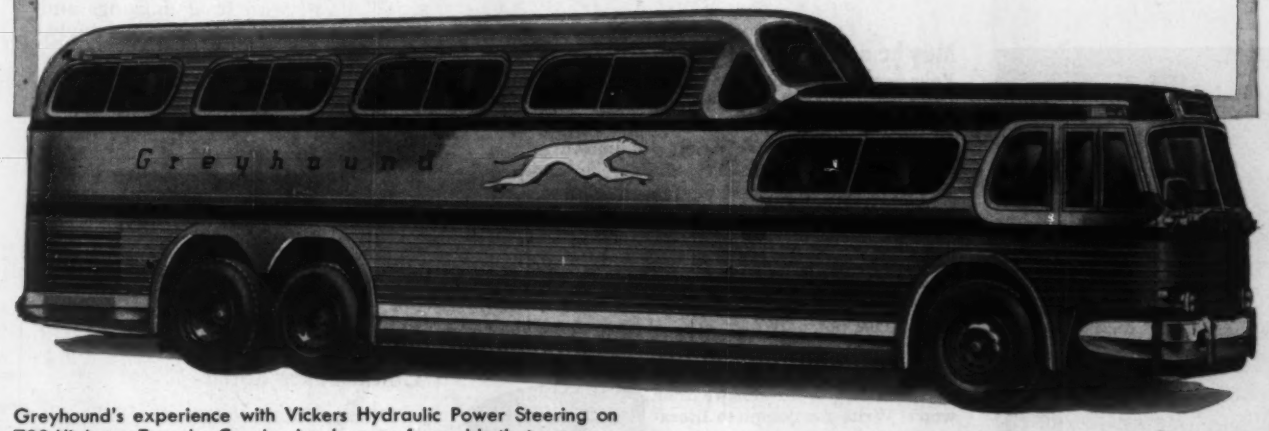
...That's why the 500 New SCENICRUISERS have VICKERS® Hydraulic Power Steering



Greyhound's experience with Vickers Hydraulic Power Steering on 700 Highway Traveler Coaches has been so favorable that management selected Vickers Steering for the 500 new Scenicruisers . . . the spectdcular new coaches (Model PD-4501) that are opening a new era in highway travel.

Greyhound officials report that Vickers Hydraulic Power Steering helps provide maximum safety and smoothness of operation. "Finger-touch" control eases the driver's job . . . he stays fresh, alert, efficient. The power mechanism automatically absorbs front wheel shock from obstructions . . . there can be no kick-back at the steering wheel. Extra steering power and quick maneuverability are always available for emergency conditions.

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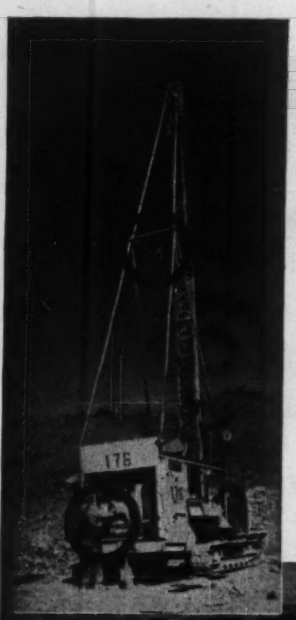

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gram, the Traffic Department will ask the Board of Estimate to approve the addition of 12,000 meters to the 27,000 that are in service now. The new meters are expected to produce at least $1 million in revenue.

Home Buyers Suit

Philadelphia—Claiming defects in their dwellings, 23 buyers of new homes in the Germantown section of Philadelphia have filed a $59,800 damage suit against the contractors and agents.

The home buyers, each seeking $2,600 damages in Philadelphia's Common Pleas Court, charge that the houses have serious faults and were not built according to the sample home displayed.

Airport Modernization Ahead

Portland, Ore.—The Port of Portland Commission has given the signal to go ahead with final drawings and specifications for a $3.1-million building program designed to convert Columbia International Airport into a modern intercontinental terminal.

Although it will be another six months at least before the commission can issue a call for bids, work should be completed in 1958 or 1959. Meanwhile, grading and drainage work is under way on recently acquired acreage to the east and south of the existing airport, which is located along the Columbia River.

Community Spirit

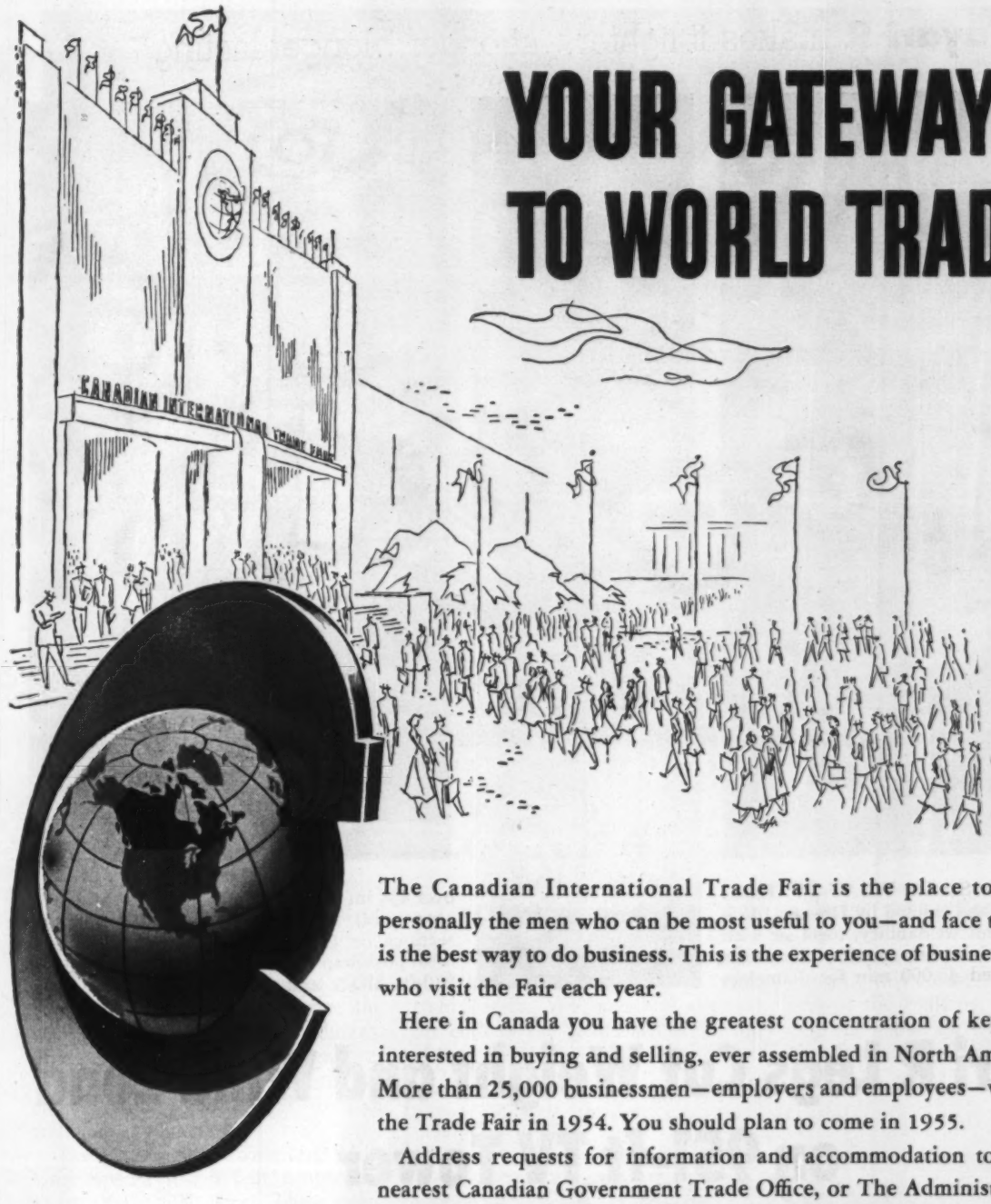
Omaha—The solution to a fill problem on an Omaha roadway job has turned out to be both a civil benefit and at the same time a construction convenience.

The new highway—the four-mile-long Outer Drive connecting Omaha's downtown district with its municipal airport—crosses the low-lying flood plain of the Missouri River. Considerable fill is needed to bring it to grade. But the nearest fill is dirt in the river bluffs which are located two miles away.

Pentzien, Inc., hired by Peter Kiewit Sons Co. to place the fill, offered to dredge 60,000 to 75,000 yd from Carter Lake, Omaha's chief water recreational spot. Dredging would deepen the lake for the city's benefit—and provide Pentzien with a source of fill material.

Carter Lake, a cutoff lake formed from a former loop in the Missouri River, constantly fills up from silt carried in from surface drainage.

YOUR GATEWAY TO WORLD TRADE



The Canadian International Trade Fair is the place to meet personally the men who can be most useful to you—and face to face is the best way to do business. This is the experience of businessmen who visit the Fair each year.

Here in Canada you have the greatest concentration of key men interested in buying and selling, ever assembled in North America. More than 25,000 businessmen—employers and employees—visited the Trade Fair in 1954. You should plan to come in 1955.

Address requests for information and accommodation to your nearest Canadian Government Trade Office, or The Administrator, Canadian International Trade Fair, Exhibition Park, Toronto, Canada.

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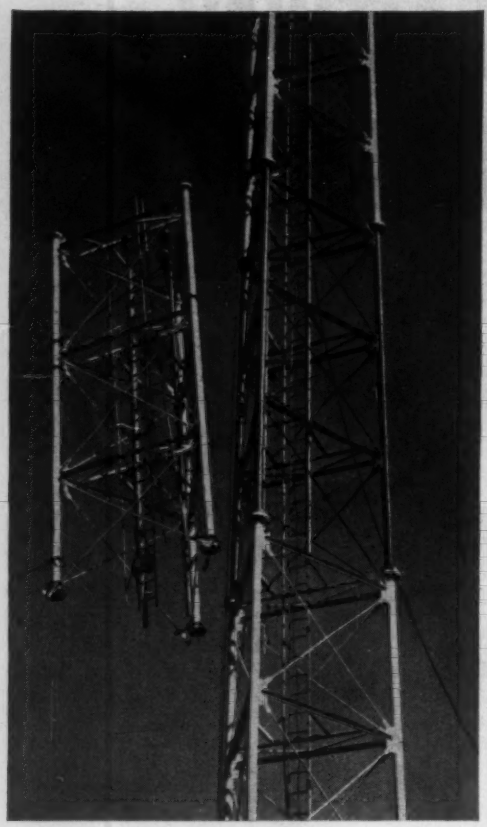

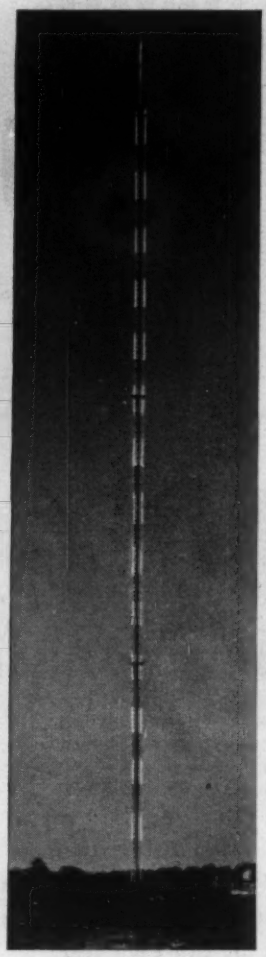

Antenna tower for Station WCAU-TV, Philadelphia, designed and erected by Dresser-Ideco Company. Excellent weldability, together with its yield point of 50,000 min for diameters 4½ in. or less, and 45,000 min for diameters over 4½ in. to 8 in., made the use of Mayari R economical. Tower was assembled in 30-ft sections on ground, which were then hoisted into position. Note guy cables, anchored at 270-ft, 570-ft and top levels.

Mayari R Legs Cut Weight and Wind Load on 951-ft TV Tower

Pointing nearly a fifth of a mile into Philadelphia's skies, WCAU-TV's antenna tower is a recent feather in the cap of Dresser-Ideco Company, Columbus, O., who designed and built it. Ideco's engineers used solid steel rounds of Mayari R for the tower legs, and gave these reasons for their selection:

First, high-strength Mayari R permitted leg sections of smaller diameter than would have been possible with structural carbon steels. This lowered the deadweight, which in turn reduced the foundation costs and simplified handling during erection.

Second, the slimmer legs put up less resistance to the wind, reducing the loads imposed on the tower by wind pressure. The leg rounds varied in diameter from 7 in. down to 2½ in.

Because of its high strength-to-weight ratio, Mayari R has been used by hundreds of tons in structural work of this type. This same feature makes it ideally suited for such projects as bridges and buildings, construction equipment and bus bodies, as well as dozens of other tough-duty applications. Catalog 353 tells the story, and a copy is promptly yours for the asking.

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BETHLEHEM STEEL

STEEL ARCHES in the pitched roof of a 80x94-ft gymnasium share the roof load with side walls, keeping steel requirements low.

Hidden-Arch Space-Frame Spans Gym

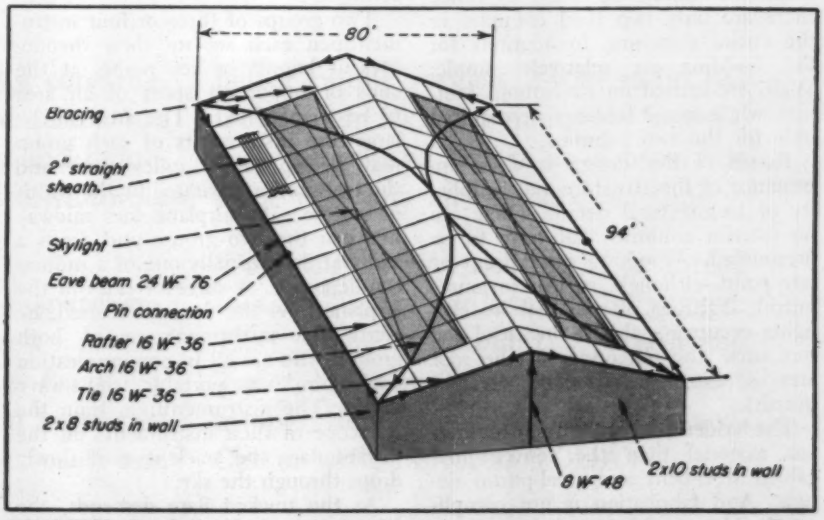
Steel requirements were shaved by using a novel space-framing system for the gable roof of a new San Mateo, Calif., high school gymnasium. The framing distributes the load over the walls and requires only two columns. Other advantages of this design over truss or beam and girder designs include: greater architectural freedom and simpler foundations.

The gym is 80 ft wide and 94 ft long. Spaced at 7-ft 2-in. centers are 16-in., 36-lb, WF rafters. These members are on a 4 on 12 pitch and butt against each other at the ridge, there being no longitudinal beams. Instead, light angle bridging provides lateral support.

Thrust of the rafters in the plane of the roof is resisted by two arches also made of 16-in., 36-lb, WF straight segments. Hidden in the plane of the roof, the arches follow the shape of an imaginary moment diagram for the loading condition created by the equal thrust of the rafters on a simple beam extending the entire length of the building. In general appearance the arches are parabolic. Arch-rafter connections are simple flange-to-flange joints made with high-tensile bolts—there are no web connections.

The ends of the arches are connected on the eave line with 24-in., 76-lb, WF members atop the side walls in the plane of the roof. And 16-in., 36-lb, WF members connect the ends of the arches across the top of the gables.

• **Design assumptions**—The structure converts half of the uniform load into rafter thrust. And the parabolic arches transmit this thrust to the four corners of the building. Steel members atop the gables carry the load in tension from the corners to the single



FRAMING distributes the roof load well: Arches carry part to the four corners. Eave beams take the arch thrust and some rafter thrust and transmit part of the roof load to the side walls. And tie beams at top of gables bring some of the arch thrust to a column (the only ones in the building) in each end wall.

8-in. wide-flange column in each end wall. The other half of the roof load is carried by the longitudinal walls.

The 24-in. members on the eaves resist tension induced by the horizontal component of the thrust in the arches. They also resist, in bending the thrust of the rafters due to unbalanced live load and such lateral loads as earthquake and wind. However, when loading is in balance, there is no bending in these eave beams—except, of course, for small secondary bending that might be due to minor inaccuracies of fabrication or deformation of the structure.

The eave beam has a pin connection at mid-point. This makes the structure statically determinate and therefore very simple to analyze.

Since the building is for a public school, plans were reviewed for structural adequacy by the California Division of Architecture. The division requires all school structures to be designed for earthquake resistance. And roof structures that distribute stress throughout must be analyzed with half the area subject to live load. Both of these loadings throw moment into the eave beams. Reason is that the parabolic arch will resist only part of the additional thrust in the rafters. And, thus, the rafters exert transverse load on the eave beams which are sized to resist this transverse load. The eave could be trussed in the plane of the roof should the load be large enough. But at San Mateo, a 24-in. beam was big enough to resist the moment.

Members of the roof frame were analyzed for both buckling instability and secondary stresses and found to be adequate for such loading.

The roof is supported at the eaves by 18-ft-high walls of 2x8 wood-stud members, spaced 16 in. c-c. Since there are only two steel columns in the entire structure, foundations for the building are relatively simple: Walls are carried on continuous footings, while spread footings are required only for the two columns.

Result of this design is clean appearance of the structure and simplicity of architectural detail. There are no interior columns that have to be fireproofed. Windows can be cut at any point—although, in this instance, outside lighting is provided by skylights occupying almost one-third the roof area (the remainder of the roof area is sheathed with 2-in. straight boards).

The hidden-arch space frame requires less material than the conventional gabled steel-bent and steel-purlin design. And fabrication is not complicated. There are fewer pieces to handle in the shop and field. And there are 30 to 40% fewer connections.

Construction was relatively simple. First, the exterior walls of the building were erected, including the two columns in the end walls and the eave beams on the side walls. A large opening was left in one of the end walls for access during erection. Rafters were lifted in pairs, with temporary horizontal ties at the bottom of every second pair to resist horizontal thrust during erection.

The gymnasium was designed for the San Mateo Union High School District by John Lyon Reid and Partners, architect-engineer firm of San Francisco, Calif. Structural design was by Alexander G. Tarics, the engineer partner.

Exact cost of the structure is hard to determine, since it was part of a $320,000 contract that included substantial rehabilitation of other facilities. But an estimate of $83,000 ($11 per sq ft) is considered by designers and contractor a reasonable approximation for cost of the gym alone.

General contractor was Morris Daley of Burlingame, Calif. Schrader Iron Works, Inc., of San Francisco was subcontractor for steel fabrication and erection.

Is Armchair Triangulation Here?

Thomas E. Riley
Registered Surveyor
Portland, Oregon

A new method of control surveying has been developed in Switzerland and now has been tested in the field by the U. S. Army Map Service and the Canadian government. It is a triangulation procedure that already has geodetic surveyors dreaming they may be able to leave mountainclimbing to the bears and geologists—and do their surveying work from the hotel patio.

Actually, this is an entirely different approach to triangulation. It promises to speed precision horizontal control surveys, to cut down on observation tower construction and to permit triangulation observations far past the horizon and across formerly inaccessible regions.

The method utilizes parachute flares dropped from airplanes and optical theodolites that are equipped with robot cameras. The work is done at night.

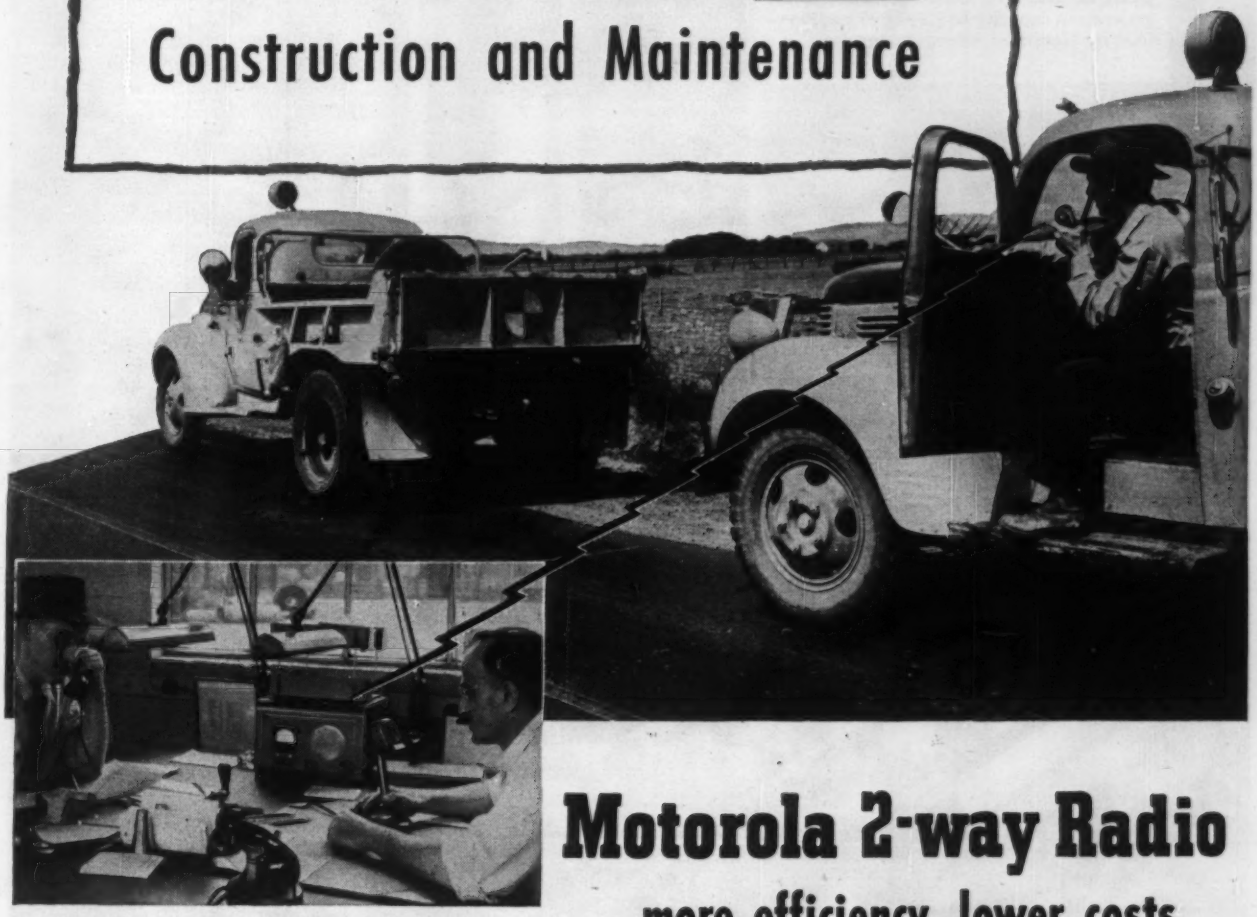
Two groups of three or four instrumentmen each set up their theodolites at known or key points at the ends or important spots of an area to be triangulated. The area can be large—the instruments of each group may be up to 50 miles apart and the two groups separated by the width of a state. An airplane flies midway between the two groups and drops a brilliant flare, usually one of a million candlepower. A surveyor rides in the airplane. As the flare is released, he alerts the instrumentmen of both groups, who are all in communication with him via portable short-wave radio. The instrumentmen train the telescope of their instruments on the distant flare and track it as it slowly drops through the sky.

As the tracked flare descends, the surveyor in the airplane sends out a series of special signals from his transmitter, usually a series of 15 signals at five-second intervals. These signals activate a solenoid on the radio receiver alongside each of the theodolites. The solenoid operates the shutter of the camera built into the theodolite. The camera records the horizontal circle readings of the theodolite. Robot-controlled by the short-wave signal, all of the instruments thus record their readings at the same fraction of an instant and, though the flare being observed is moving down through the sky, the results for triangulation are as if it were solidly mounted on some convenient mountaintop.

The recording cameras are fully automatic. The radio signal clicks the camera shutters and also activates automatic film transports that ready the cameras for the next reading. The series of 15 sets of readings (sometimes five) are taken, as is customary in geodetic work, to give a mean and to eliminate any inaccurate sighting by an instrumentman. The readings are recorded on 35-mm film by the cameras. The precision of the entire process is so great that the final $\frac{1}{10}$th-second fractions of each instrument's readings on the flare can be and are computed in the survey office instead of the field—by viewing the camera film through a special laboratory microscope equipped with an ingenious evaluating micrometer.

One of the first uses to which this flare triangulation has been put in the U. S. and Canada is in the pinpointing of islands that are over the horizon from the mainland—formerly impossible to do to high accuracy. Bridging jungles, deserts and polar wastes with control networks are other obvious uses of the method, as well as the tying together of county and state control networks. Variations of the method are also being tried, by having ships fire rockets equipped with parachute flares into the sky and by sending up aerial balloons that carry electric lights. The light source used depends on the distance to be spanned.

Radio Control means Better Construction and Maintenance



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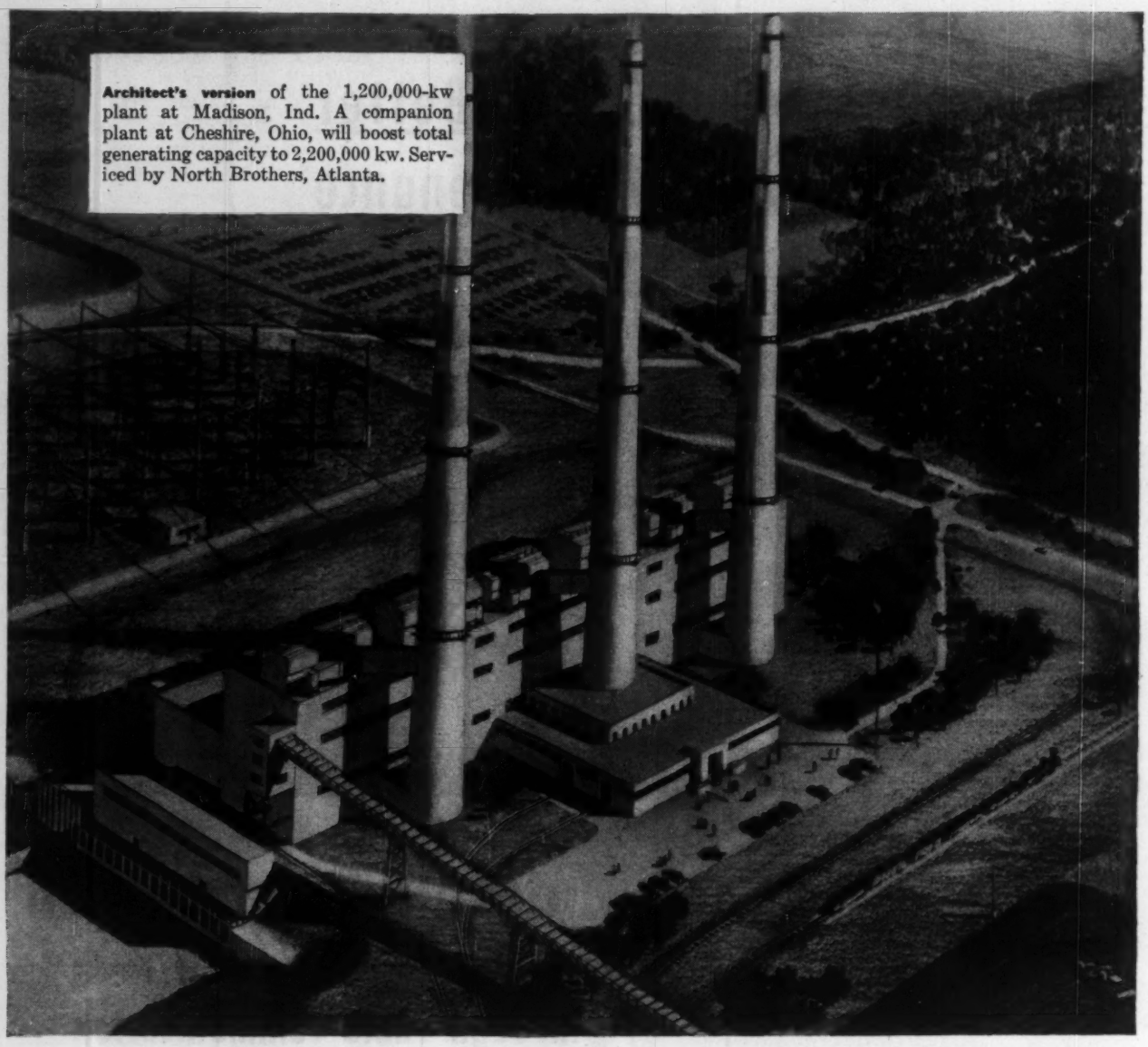

Architect's version of the 1,200,000-kw plant at Madison, Ind. A companion plant at Cheshire, Ohio, will boost total generating capacity to 2,200,000 kw. Serviced by North Brothers, Atlanta.

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Fiberglas and Kaylo selected for $4,000,000 power insulation contract

Fiberglas* and Kaylo® insulations will contribute importantly to the efficient, economical functioning of two tremendous steam-electric power plants being built by the Ohio Valley Electric Corporation. OVEC was organized by 15 private electric utilities to provide the full electric requirements of the Atomic Energy Commission's new diffusion plant near Portsmouth, Ohio—power which will come from the 1,200,000-kw Clifty Creek Plant at Madison, Ind., and the 1,000,000-kw Kyger Creek Plant at Cheshire, Ohio. This $4-million insulation contract is thought to be the largest of its kind in electric utility industry history.

Fiberglas and Kaylo are outstanding in thermal efficiency—exceptionally strong, moisture-resistant, dimensionally stable, light in weight, easy to apply. They can even be re-used after removal for inspection. Together, they offer the most complete and versatile line of plant insulations available, ranging from lowest sub-zero to 1200° F. (Kaylo is now distributed by Owens-Corning Fiberglas Corp. Available in quantity.)

For full technical data, refer to Sweet's File, Chemical Engineering Catalog or Refinery Catalog—or write direct to Owens-Corning Fiberglas Corporation, Dpt. 145C-24, Toledo 1, Ohio.

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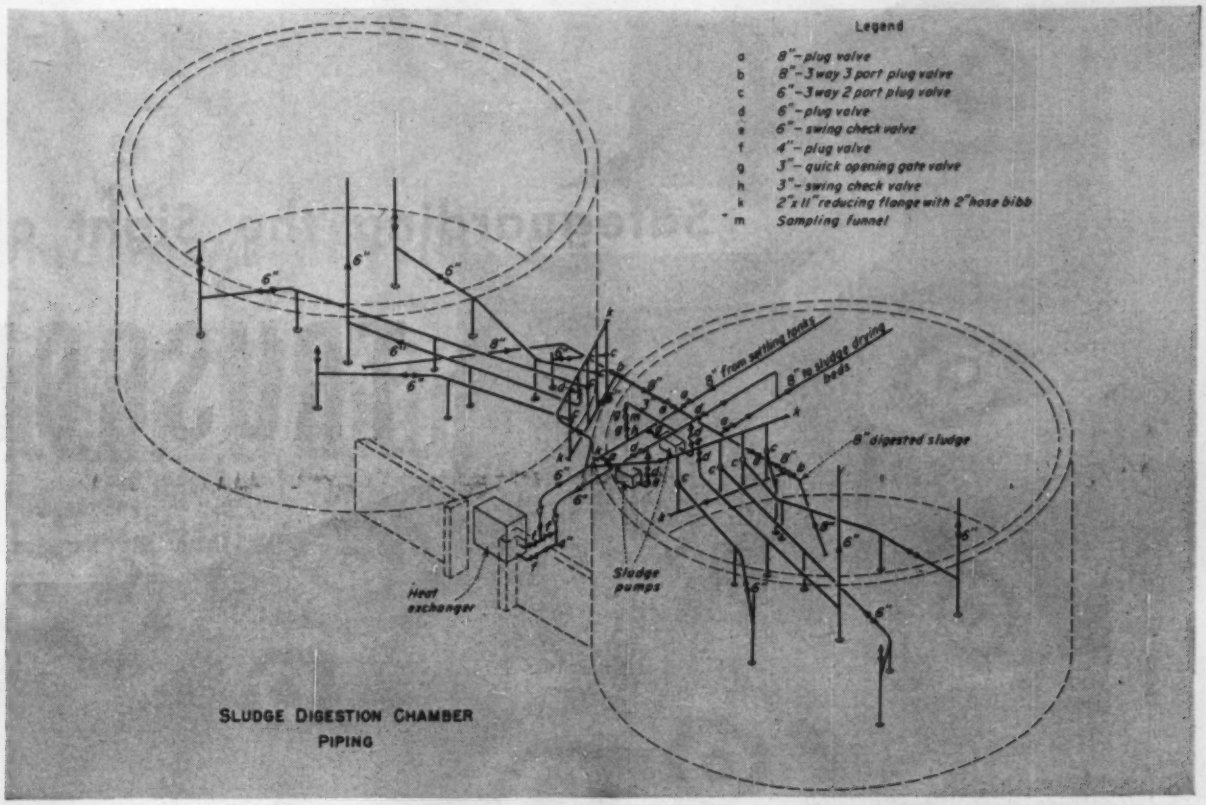
Legend
a 8"–plug valve
b 8"–3 way 3 port plug valve
c 6"–3 way 2 port plug valve
d 6"–plug valve
e 6"–swing check valve
f 4"–plug valve
g 3"–quick opening gate valve
h 3"–swing check valve
k 2"x 11" reducing flange with 2" hose bibb
m Sampling funnel
8" from settling tanks
8" to sludge drying beds
8" digested sludge
Heat exchanger
Sludge pumps
SLUDGE DIGESTION CHAMBER PIPING

PIPING is the key to improved control of digestion in this design. Object is control of temperature throughout the tank.

For Better Control in Sludge Digestion

Jack L. Staunton
Seeley, Stevenson, Value & Knecht
New York, N. Y.

Present commendable efforts to cut sewage sludge digester costs by cutting digestion time are finding apparent success both through thickening sludge and recirculating digester gases. Here is a digester design aimed ultimately at cutting digestion time through improved temperature control. Immediate aim of the design is better degree of digestion and versatility of operation.

The hope is to aid in the removal of the unknowns in temperature distribution throughout the digestion chambers. The design employs an external heat exchanger together with a novel arrangement of the sludge piping, shown schematically above. Although this drawing shows two sludge digestion chambers, the design can easily be adapted to one chamber.

Full use is made of header and multi-port plug valves to withdraw digesting sludge from any one of four points in either digestion chamber, to mix it with digested or raw sludge, to heat the mixture, and then either to put it back in any of four points in the same chamber or any one of five points in the other chamber.

Two thermometers are included in the design: one on the pump suction header and one adjacent to the sludge withdrawal points. It should be a fairly simple procedure to determine the approximate temperature at any of the other withdrawal points. Using the sludge sampling line, the condition of sludge at the various points also can be determined. The various terminal positions of the pipe in the digestion chambers are at different locations and are placed at different elevations in order to obtain a more desirable distribution throughout the chamber. In the same manner, if it is so desired, any number of terminal points may be obtained merely by adding more pipe, fittings and valves, and lengthening the headers.

With the piping shown in the diagram the digested sludge may also be transferred from either chamber to the other and from either chamber to drying beds by pumping or gravity. Use of one or two sludge pumps acting separately or together is all that is required. The residual sludge from the line going to the drying beds may be put back into either chamber.

Installation of hose connections, blind flanges and Dresser couplings should facilitate the cleaning of any of the sludge piping that might clog.

It has been shown that it takes approximately half the time to digest sludge in the thermophilic zone (110°-135° F) that digestion requires in the mesophilic zone (80°-105°). Thermophilically digested sludge has been found to be malodorous and difficult to dry on filters, but this has been overcome by first digesting it in the thermophilic zone and then completing digestion in the mesophilic zone.

It is hoped that with the better heat distribution of this design, it will be found practical to make use of thermophilic or a combination of thermophilic and mesophilic digestion.

If it were desired to operate one digestion chamber in the thermophilic zone and the other in the mesophilic zone, all that would be required is installation of suitable tees and valves in the pipe leading to and from the heat exchangers and the addition of an external refrigeration chamber to lower the temperature where desired.

This design was incorporated in original plans (1947) for a 4-mgd sewage treatment plant for the Town of Kearny, New Jersey, a plant now under construction. The design was created by the author in collaboration with Morton W. Lieberman, consulting engineer of Princeton, N. J., who was and is engaged by Kearny.

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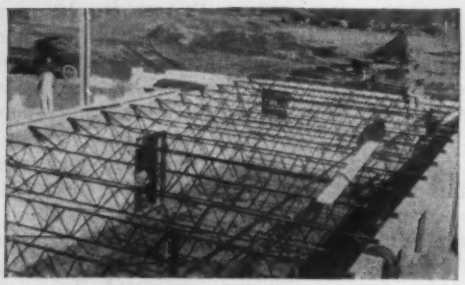

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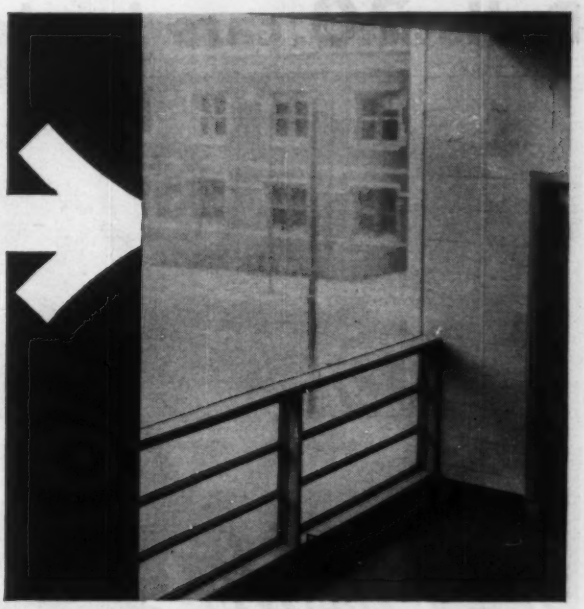

UNIVERSITY OF PENNSYLVANIA PHYSICS LAB., Philadelphia, Pa.
ARCHITECTS: Jas. R. Edmonds, Jr., Baltimore, Md. and Willing, Sims & Talbutt, Philadelphia, Pa.
GENERAL CONTRACTOR: The Baton Construction Corp.
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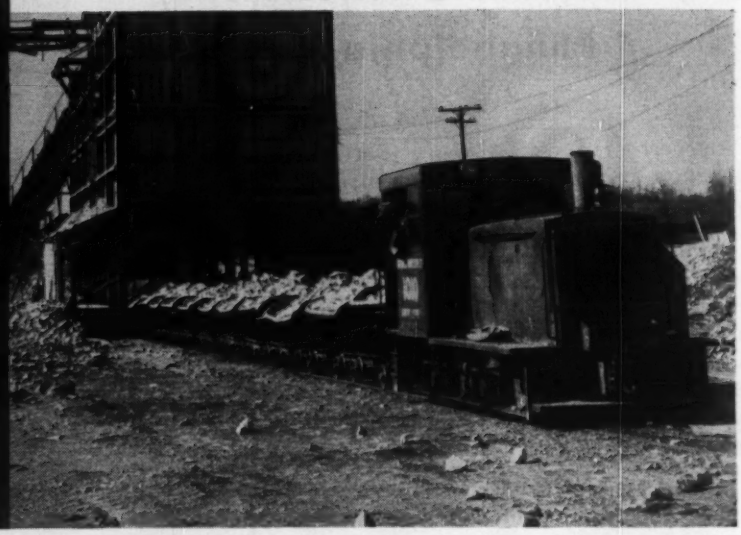

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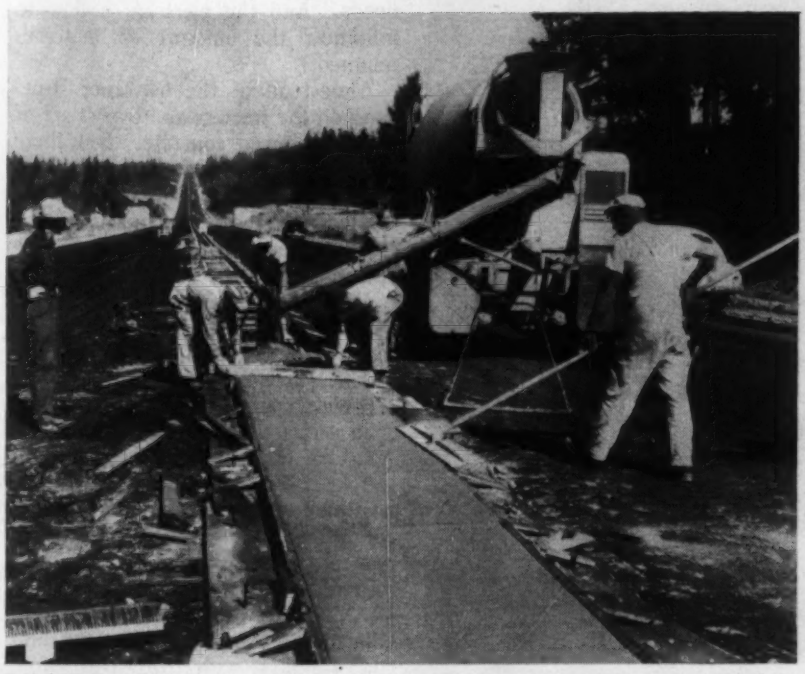


WORKMEN PAVE concrete curb that forms the median strip on part of the Portland-Salem Freeway. This section of the 36-mile highway is already in partial use as it replaces a secondary road. Most of the route is on completely new alignment.

Oregon's Portland-Salem Freeway Scheduled for 1955 Completion

A 36-mile freeway is Oregon's answer to traffic congestion between its state capital—Salem—and its largest city—Portland. Scheduled for completion in October, 1955, the new highway, which connects with a 9-mile freeway bypass of Salem that was open to traffic Nov. 1, 1954, provides 45 miles of freeway from south of Salem to the outskirts of Portland. And future construction, as yet unscheduled, will take the freeway into the center of Portland.

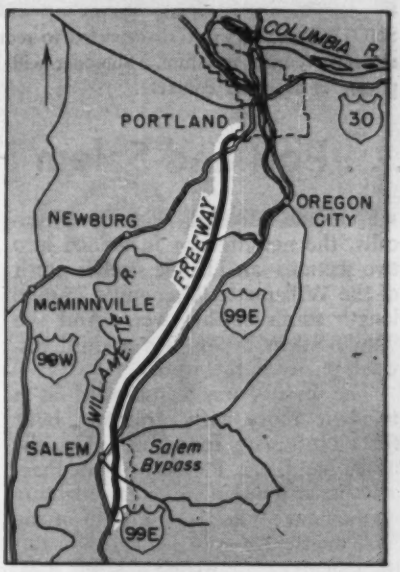
Portland and Salem lie at the north end of the Willamette Valley in which is centered much of Oregon's agricultural and lumbering wealth. Thus, the highway route between these two cities funnels a large amount of traffic from the wealth-producing southern part of the Willamette Valley toward Portland.

The existing highway—U. S. 99E—was built to improved two-lane standards in 1921. That was long before Oregon had a freeway law making it possible to limit access to highways. Since then, extensive development along the highway has made conversion of the existing road to a four-lane divided highway prohibitively expensive. For a lesser out-of-pocket expenditure, a completely new—and more direct—route could be provided.

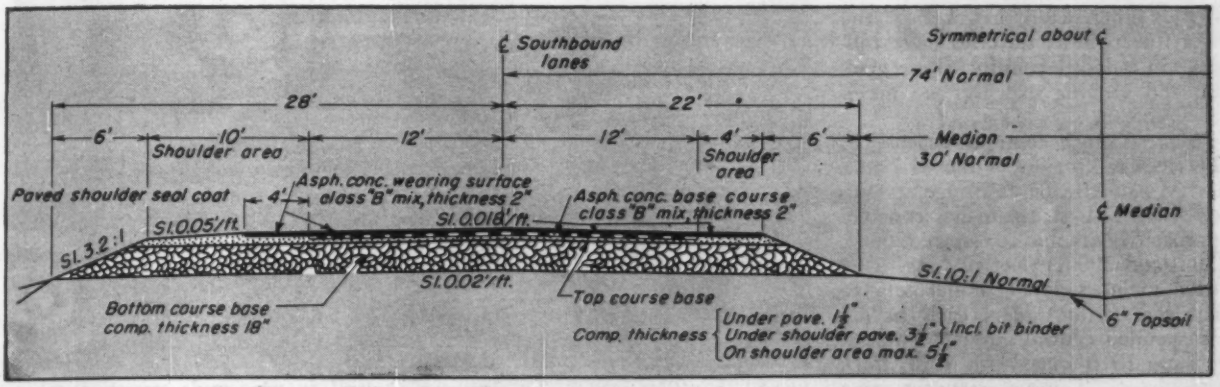
Most of the country through which the new Portland-Salem Freeway travels is practically undeveloped except for farm use. Thus, the cost of purchasing access rights and the cost of providing local service roads is quite small as compared with improving U. S. 99E to freeway standards. And the existing road then will become more than adequate to serve the needs of the local communities which are strung along it because through traffic will use the freeway.

A second major north-south highway—U. S. 99W—extends along the west side of the Willamette Valley passing some ten miles from Salem. It is expected that much through traffic from this route will be diverted to the new freeway. Result will be traffic relief for that road, too.

(Continued on page 44)



IMPROVED ALIGNMENT for the freeway and limited access will reduce travel time between Portland and Salem very materially as compared to the old route.



TYPICAL HALF SECTION OF ROADWAY south of the Willamette River. The base course, 18-in. thick, is built up of three compacted layers. Surface includes 4-in. of asphaltic concrete placed in two layers. Shoulder is paved with 2-in. layer to 4-ft width. North of the river a narrow raised median separates the pavements.

SHOULDER PAVING is expected to reduce damage to pavement edge by restricting under pavement moisture. Shoulder will be textured with seal coat and chips. All paving is asphaltic concrete.

. . . Portland-Salem Freeway

• **Four-lane, divided highway**—Physically, the new freeway is divided into two sections—an 11-mile stretch north of the Willamette River and a 25-mile length south of the river. And the 9-mile Salem bypass was a third distinct phase of the work.

The bypass was constructed as a two-lane route with structures built for an ultimate four lanes. On the other hand, the Portland-Salem Freeway is a four-lane divided highway throughout. The section north of the Willamette River is divided by a 6-ft median strip consisting of a 4-ft wide raised concrete separation with 1-ft wide raised asphalt "wiggle bars" on each side. South of the river the north-bound and south-bound lanes are separated by some 30 ft. Reason for this difference is that north of the river the highway traverses more rolling and wooded country where grading and clearing expenses are necessarily greater.

Biggest single item of expense in the freeway program is the $1.7 million Willamette River Bridge at Wilsonville. This structure has concrete approach bents and a 3-span (200-ft, 250-ft and 200-ft) river crossing. The latter includes four parallel sets of cantilever plate girders each having a suspended central girder. The girders are 10 ft deep with ½ in. thick web plates. Transverse trusses serve as floor beams and there are four lines of auxiliary stringers.

Approach on each side of the river is a 220-ft long continuous series of three concrete spans. The bridge roadway is 58 ft wide between curbs providing space for two 27-ft lanes and a 4-ft raised median.

The bridge has high concrete piers —the height necessary to allow for floods. And the piers are hollow to minimize the amount of materials required.

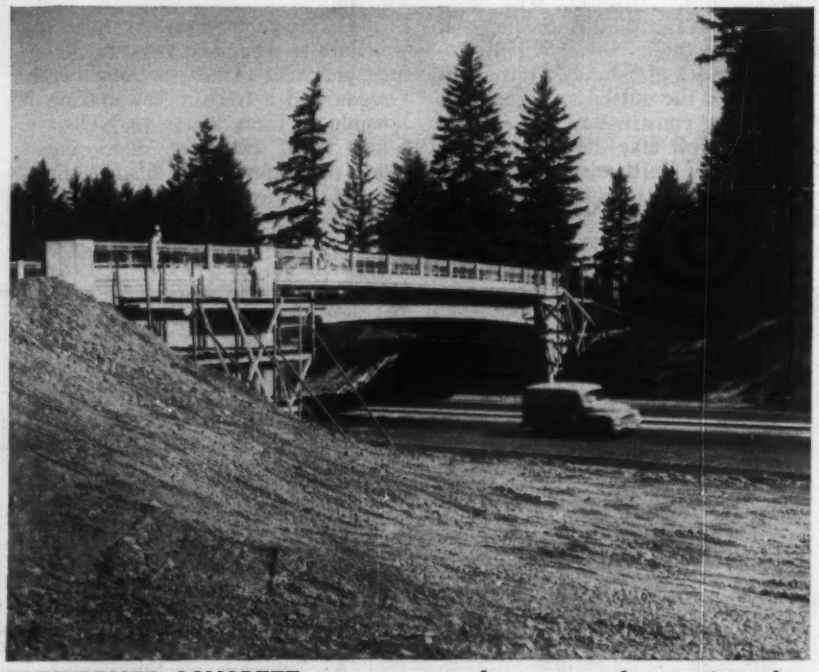
Almost all of the 64 other structures on the freeway and bypass are of plain reinforced concrete. But there are several prestressed concrete overcrossing structures. These are all located near the northern end of the freeway where conditions are favorable for their use.

Use of a center bent for an overcrossing structure is considered by the highway department to be a distinct hazard where the median strip is only 6 ft wide. Consequently, a continuous span across the freeway was adopted. Also, the department wanted to keep the level of the overpass as low as possible to reduce grading costs. These conditions made the use of prestressed concrete overcrossings the advisable system.

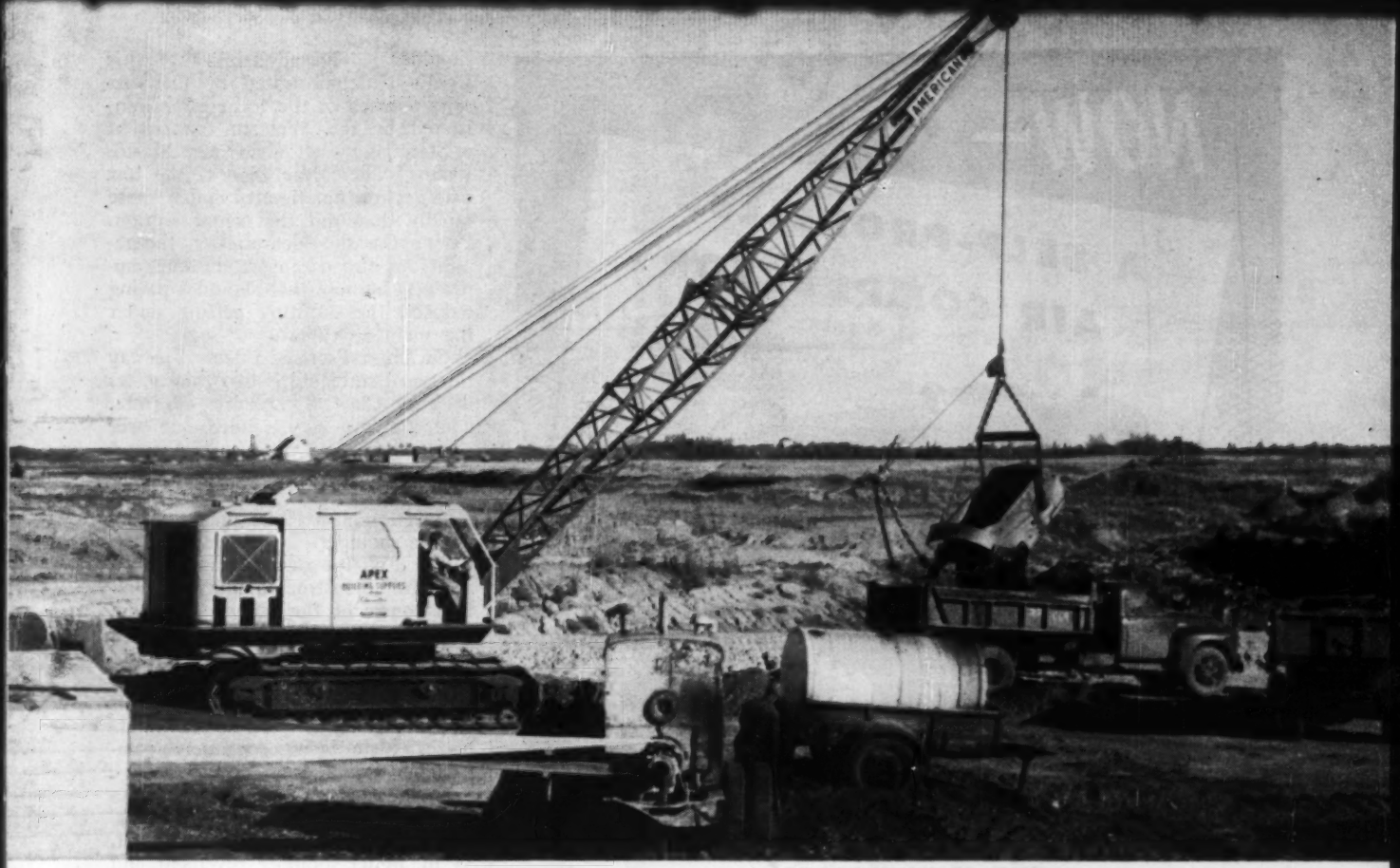
A typical prestressed bridge for county roads has a 101-ft span and carries a 26-ft wide roadway. (More important highways have 30-ft roadways.) The typical bridge has five T-shaped girders, each of which is post-tensioned by 13 steel cables. Each cable is composed of 10 wires 0.25 in. dia. The working force imposed by the cables is 782,000 lb per girder.

• **Asphalt paving**—Like all other roads in Oregon, the freeway is paved with asphalt. A feature of the surfacing is the paving of a 4-ft width of the

(*Continued on page 46*)



PRESTRESSED CONCRETE structures are used on some grade separations where span is long and headroom restricted. There are no crossings at grade on the freeway or on its extension—the Salem bypass.



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Efficient gravel loading operations present essentially the same problems everywhere. Steady, high output is necessary for profits. Five miles northeast of Edmonton, Alberta, Canada, an American 700 Series Dragline is carving out a mighty production record for Apex Building Supplies Ltd. Using a 50-foot boom with a 60 cu. ft. bucket, the 700 loads out 3,000 tons of pit run gravel in each 10-hour day. It's day-by-day production like this that spells profits!

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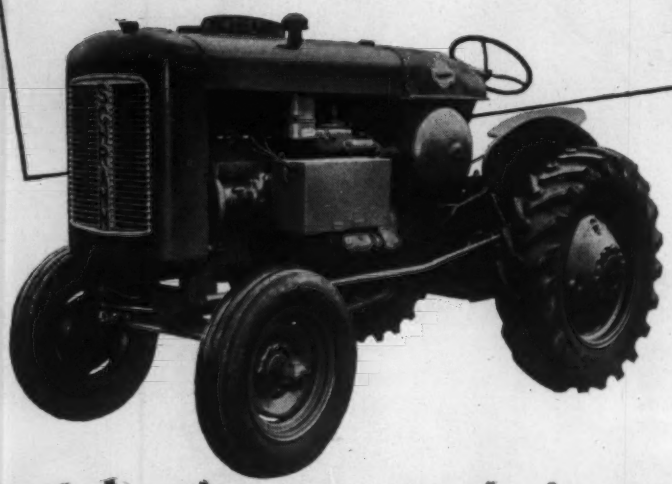

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shoulder. The advisability of this step was demonstrated by early results released of the test road administered by the Western Association of State Highway Officials near Malad, Idaho. There, the edge of the test road section deteriorated much more rapidly than did the center section. Paving the shoulder arrested the rapidity of the pavement breakup, apparently because that shoulder paving reduced the moisture getting under the main pavement.

On the Portland-Salem Freeway the usual surfacing is two thicknesses of 2-in. Class B asphaltic concrete. The top layer is extended out over the shoulder for a distance of 4 ft and is given a seal coat to which chips are applied to distinguish it from the pavement and to discourage driving on the shoulder.

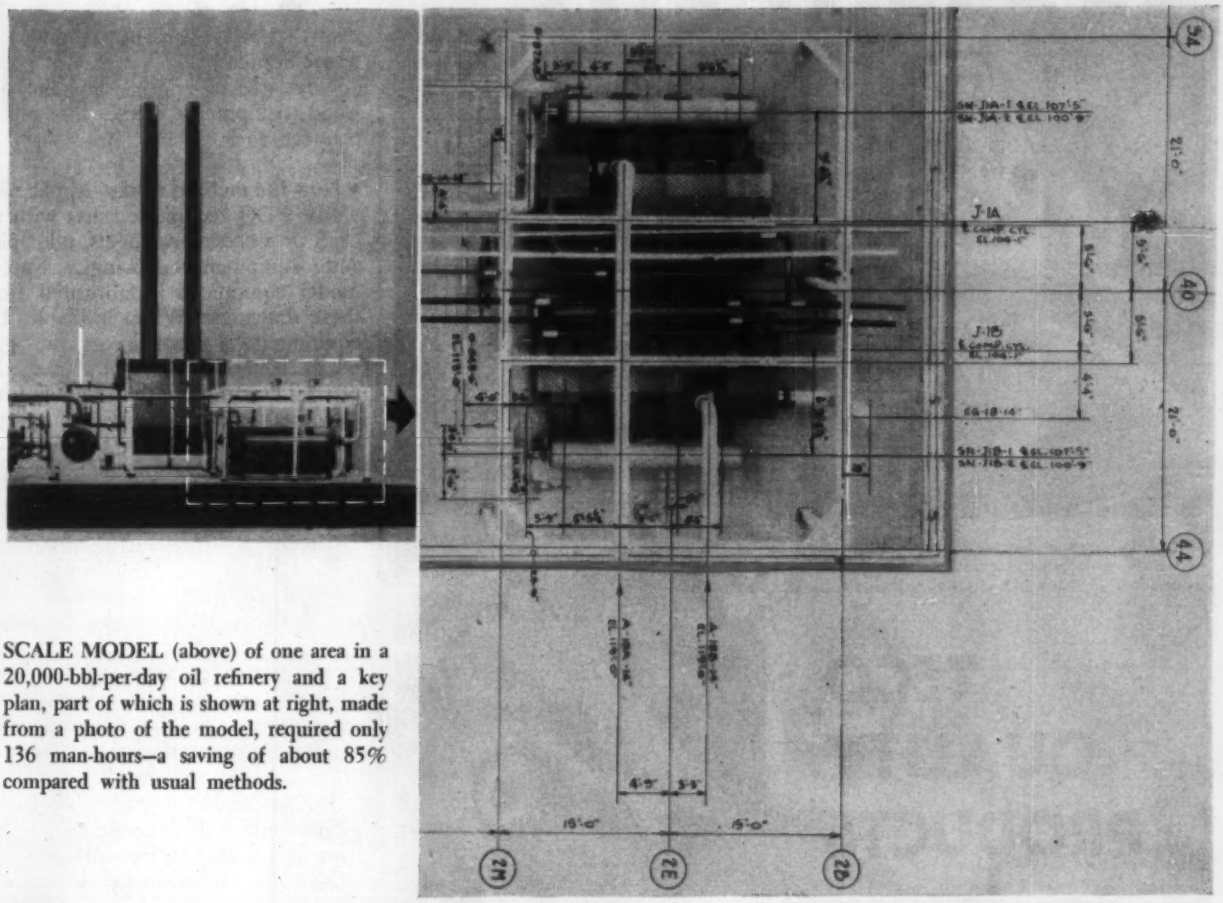
The asphaltic pavement is based on a carefully constructed subgrade. Bottom course of the base is an 18-in. thickness of graded, crushed rock that varies from 1¼-in. maximum size to 3-in. maximum size depending on the aggregate supplies available. This course is laid in three equal thicknesses each being separately compacted.

On top of the base course is a layer of ¾ in. crushed material. Thickness is 1½ in. under main pavement, 3½ in. under shoulder pavement and 5½ in. on the shoulder. The top course of the base is rolled with steel wheel rollers. The top course is treated by a bituminous binder course before paving. It consists of RC-3, rapid-curing, cut-back asphalt and additional ¾ in. material. The asphalt is applied at a rate of ¼ to ½ gal per square yard.

A further step in the asphalt paving work is a tack coat of emulsified asphalt (RS-1) between the base course of asphaltic concrete and the wearing course. The emulsified asphalt is applied at a rate of about 0.1 gal per square yard. This tack coat promotes bond between the two courses of asphaltic concrete.

• **Many contracts**—Work on the Portland-Salem Freeway is divided into many contracts all of which have now been let and several of which have been completed. In general, grading, paving and structures are awarded separately.

With the exception of the work on the Willamette River Bridge, the biggest contracts have been two $1 million dollar grading jobs. The work is broken up into many contracts to provide better competition in the bidding by making the jobs smaller. But just as important a reason is to provide work that can reasonably be done in one construction season.



SCALE MODEL (above) of one area in a 20,000-bbl-per-day oil refinery and a key plan, part of which is shown at right, made from a photo of the model, required only 136 man-hours—a saving of about 85% compared with usual methods.

Photographs of Models in Place of Drawings

Design costs can be cut for complex structures by using photos of models to which dimensions have been added

A new technique developed by the Parco Co., New York, industrial design consultants, promises to cut design and drafting costs by reducing manpower requirements and saving time in designing such structures as power plants, refineries and chemical plants with intricate mazes of piping.

Parco calls it the PDQ technique. Key item is a patented prefabricated assortment of structural members, piping and equipment that makes it easy to build and pull apart a three-dimensional scale model of the structure. The model can be photographed to obtain plan, elevation and cross-section views. And the photographs then can be dimensioned and used in the field, in lieu of drawings, to build the structure.

• **Estimates of savings**—Parco has applied the technique successfully in its own design work. The company, relying on this experience, offers the following as an example of the method's economy: If the design phase of a $10 million plant would cost about $600,000 with conventional design drawings, the PDQ technique could save about $250,000 in direct cost, plus $20,000 to $30,000 for a model built by customary methods. PDQ also could reduce drafting time as much as 40%.

As another example: Consider a process calling for 300 pipelines connecting with 75 pieces of equipment. Conventional design would require 4,350 man-hours, with eight men taking 17 weeks to do the job. The drawings would cost $24,000. For the PDQ technique, Parco says, only 1,650 man-hours would be needed, with four men doing the job in 12 weeks. The total cost would be $14,500, including the model. Thus, there would be a time saving of 30% and a cost saving of 40%. In addition, the engineers would have a cost-free model of the plant, worth $20,000 if assembled by usual methods.

Savings vary with the application: The more complicated the plant, the greater the possible savings with PDQ.

• **Model easily built**—The parts for building a model include scaled-down standard equipment, such as piping, fittings, valves, structural members, vessels, tanks, platforms, manholes, nozzles and grid boards. Parco is prepared to fabricate special equipment, such as furnaces, compressors and unusual vessels, within 24 hours.

Grid boards consist of a metallic-clad plywood base, graduated with inscribed lines for convenient location of equipment and scaling of distances. Vessel saddles and foundation supports are built with magnetized metal to enable them to stick to the grid boards.

Vessels are supplied in increments of one foot, and dished heads can be added after a decision has been made as to whether the vessels are to be horizontal or vertical. Filler pieces enable their length to be adjusted.

When a platform is desired, nails are pushed into the soft wood of a vessel to support it. The bottom of each platform has a magnetized strip to hold it to the nails.

All piping, bends and offsets are prefabricated to scale with or without insulation and in a wide variety of colors. Made of plastic, the pipe can be cut to length with a small pipe-cutting tool. Piping supports also are furnished and can be installed

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easily. Valves can be snapped on where desired.

Nozzles can be pinned into the softwood equipment where the piping connects to it.

• **How the method works**—Application of the PDQ technique starts with receipt of process flow sheets, pilot plan and equipment drawings. Special model equipment is fabricated from these drawings. When available, the equipment is located on the grid board in accordance with the plot plan. The structure is assembled from structural drawings. Working with the process flow sheets, the designers then go ahead and add nozzles, piping and valves.

Next, photographs are made of the model to obtain plan, elevation and cross section views. (The photographic setup is designed to eliminate shadows.) The grid board can be pulled apart so that cross sections can be taken, and equipment can be raised easily to expose hidden features for special views. Finally, dimensions are added to the master photos and copies made for field use.

Jack R. Parker, president of Parco, points out that in addition to the time and money-saving advantages of PDQ, the model makes it possible to detect errors and make changes quickly.

Also, designers do not have to be skilled model makers to use the kit. Parco now is offering licenses for PDQ to other engineering firms and chemical and oil companies.

Traffic Surveys Favor Bridge Over Mississippi

Two engineering firms have reported that the traffic potential is sufficient to justify construction of an $11-million toll bridge across the Mississippi River from Helena, Ark., to Coahoma County, Miss.

Wilber Smith & Associates, New Haven, Conn., traffic consultants, and Howard, Needles, Tammen and Bergendoff, Kansas City consulting engineers submitted the reports to the Arkansas and Mississippi Highway Commissions.

Of the total estimated cost of the project, $9.9 million would go for construction, $575,000 for interest during construction, $160,000 to cover bond discount costs and $320,000 would be put away for reserve debt service.

Arkansas has agreed to allocate $2 million for the project, and Mississippi has approved a contribution of $1 million. The remaining $8 million would be financed by 30-year revenue bonds.

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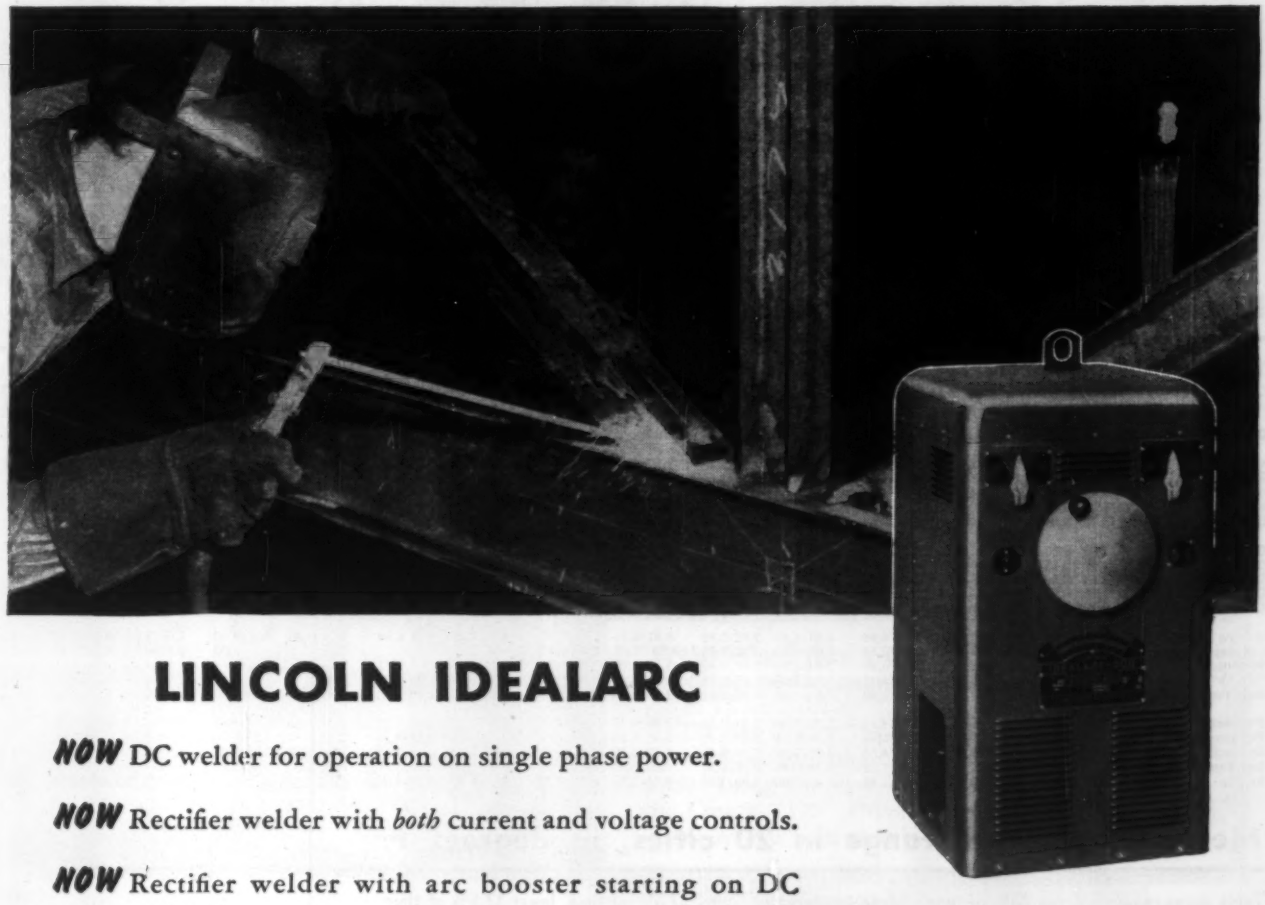

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Atlanta	3.98	−0.84	8.91	−0.58	47.6	+0.9	57.6	37.5
Baltimore	2.68	−0.31	2.97	−3.68	34.4	−0.6	44.6	24.2
Birmingham	6.47	+1.30	11.17	+1.02	48.6	+0.9	58.5	38.6
Boston	4.11	+1.18	5.03	−1.40	32.0	+2.8	39.1	24.9
Chicago	1.83	+0.42	3.32	+0.07	28.8	+1.4	36.1	21.4
Cincinnati	6.24	+3.69	8.87	+2.97	35.6	+0.8	43.8	27.3
Cleveland	2.69	+0.57	4.91	+0.41	30.8	+2.2	38.1	23.5
Dallas	1.93	−0.69	3.28	−1.81	48.9	−0.9	59.4	38.4
Denver	0.56	0.00	0.71	−0.35	28.9	−5.6	40.4	17.3
Detroit	2.49	+0.47	4.18	+0.08	28.4	+1.7	34.6	22.1
Kansas City	3.27	+2.11	5.46	+2.87	31.5	−3.1	40.7	22.2
Los Angeles	0.68	−2.69	4.98	−0.77	57.0	+0.6	67.3	46.6
Minneapolis	1.54	+0.65	2.01	+0.32	14.4	−3.8	23.9	4.9
New Orleans	6.38	+2.20	12.86	+3.90	58.7	+0.2	66.7	50.7
New York	2.48	−0.65	3.29	−3.30	34.7	+2.0	42.3	27.1
Philadelphia	2.49	−0.53	2.94	−3.45	36.1	+2.5	44.9	27.3
Pittsburgh	3.32	+0.97	4.34	−0.84	35.2	+1.6	43.3	27.0
St. Louis	3.16	+1.28	4.68	+0.48	36.4	−0.3	45.1	27.7
San Francisco	1.18	−2.73	5.23	−2.71	52.2	−0.8	58.6	45.8
Seattle	2.62	−1.12	4.69	−3.54	41.3	−2.2	46.0	36.6

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.

Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May	May	Mid May-Mid June	June	Mid June-Mid July	July	Mid July-Mid Aug.	Aug.	Mid Aug.-Mid Sept.	Sept.	Mid. Sept.-Mid. Oct.
Atlanta	3.43/6.33	3.12/5.72	2.82/5.10	2.48/4.72	2.14/4.33	2.50/4.38	2.87/4.43	2.93/4.62	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.59/2.90	2.01/3.38
Baltimore	2.59/4.13	2.59/4.17	2.58/4.20	2.76/4.30	2.94/4.40	2.73/4.42	2.52/4.44	2.57/4.71	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57
Birmingham	4.48/6.63	3.91/5.85	2.94/5.07	3.05/4.81	3.16/4.55	2.90/4.70	2.64/4.84	3.29/5.18	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.52/2.58	1.84/3.24
Boston	2.94/4.50	2.66/4.45	2.39/4.40	2.58/4.29	2.39/3.50	2.42/3.84	2.09/3.50	2.35/3.76	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.49/4.07	2.62/4.26
Chicago	1.99/3.11	2.09/3.12	2.19/3.13	2.24/3.56	2.16/4.00	2.29/3.83	2.42/3.67	2.46/3.66	2.49/3.65	2.31/3.65	2.13/3.65	2.11/3.70	1.59/3.10	1.59/2.95
Cincinnati	2.39/4.29	2.66/3.94	2.34/3.60	2.42/3.85	2.49/4.10	2.59/4.30	2.69/4.50	2.54/4.10	2.39/3.70	2.32/3.95	2.24/4.20	2.02/3.64	1.49/2.90	1.74/3.28
Cleveland	2.10/2.98	2.15/3.13	2.20/3.27	2.27/3.38	2.33/3.49	2.17/3.53	2.00/3.56	2.24/3.82	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29
Dallas	2.34/3.86	2.50/4.68	2.66/5.50	2.82/5.38	2.99/5.25	2.39/4.85	1.79/4.45	1.59/3.72	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.55/3.50	1.60/3.25
Denver	0.59/1.10	0.96/1.75	1.34/2.40	1.48/2.65	1.62/2.90	0.64/2.32	0.67/1.75	0.94/1.88	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.62/1.10	0.46/0.89
Detroit	1.77/2.78	1.78/2.76	1.79/2.73	2.14/3.20	2.49/3.67	2.66/3.88	2.84/4.10	2.46/3.90	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.63/2.69	1.70/2.66
Kansas City	1.59/2.90	1.99/3.15	2.39/3.40	2.82/4.40	3.24/5.40	3.42/5.82	3.61/6.25	3.19/5.47	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	1.69/4.07	1.48/3.21
Los Angeles	1.13/2.95	0.68/1.92	0.22/0.90	0.14/0.62	0.05/0.35	0.02/0.18	0.00/0.02	0.00/0.01	0.00/T	0.00/T	0.00/T	0.00/0.02	0.15/0.60	0.20/0.95
Minneapolis	0.98/1.67	1.34/2.14	1.69/2.60	2.16/3.29	2.64/3.98	2.89/4.49	3.14/5.00	2.64/4.50	2.14/4.00	2.10/3.85	2.19/3.70	2.24/3.78	1.29/2.45	0.98/2.01
New Orleans	3.22/5.30	2.94/5.15	2.66/5.00	2.65/5.12	2.64/5.25	3.18/5.88	3.72/6.50	4.54/6.95	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	1.99/4.12	2.34/4.40
New York	2.34/4.05	2.40/3.92	2.47/3.78	2.50/3.90	2.54/4.02	2.45/3.91	2.36/3.80	2.81/4.25	3.26/4.70	2.99/4.95	2.89/4.70	2.46/4.30	2.09/4.13	2.15/4.04
Philadelphia	2.62/4.00	2.56/3.91	2.49/3.82	2.44/4.11	2.39/4.40	2.54/4.25	2.69/4.10	2.94/4.24	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85
Pittsburgh	2.34/3.47	2.32/3.44	2.29/3.40	2.39/3.58	2.49/3.75	2.68/3.98	2.86/4.20	2.79/4.35	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	2.09/3.20	1.96/2.96
St. Louis	2.27/3.95	2.43/3.88	2.59/4.10	2.86/4.65	3.13/5.20	2.96/5.25	2.79/5.30	2.60/4.78	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	1.69/3.25	1.78/3.28
San Francisco	1.94/3.55	1.30/2.54	0.67/1.54	0.44/1.12	0.18/0.69	0.09/0.37	0.00/0.05	0.00/0.03	0.00/0.01	0.00/0.00	0.00/0.00	0.00/0.13	0.19/1.20	1.12/2.25
Seattle	1.81/3.43	1.76/3.16	1.64/2.90	1.53/2.45	1.42/2.00	1.09/1.86	0.76/1.73	0.48/1.20	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	2.32/3.50	3.07/4.55

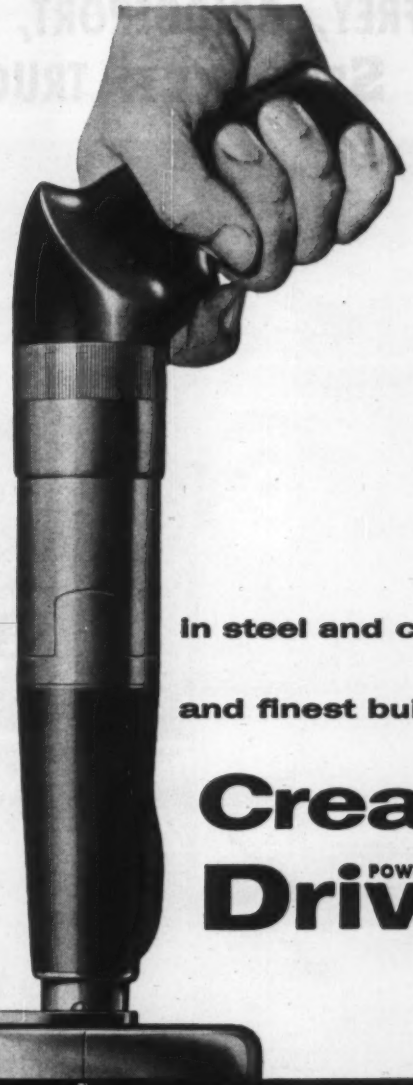
T—Traces (Less than 0.005 inches)

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.

Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	Mar.	Mid Mar.-Mid Apr.	Apr.	Mid Apr.-Mid May	May	Mid May-Mid June	June	Mid June-Mid July	July	Mid July-Mid Aug.	Aug.	Mid Aug.-Mid Sept	Sept.	Mid. Sept.-Mid. Oct.
Atlanta	51.2/53.6	55.9/58.0	60.9/62.6	64.9/66.3	69.0/70.5	73.5/74.6	77.3/78.1	78.5/79.3	79.0/79.9	78.9/79.9	78.6/79.1	76.3/78.1	62.3/63.8	56.6/58.2
Baltimore	42.0/45.7	46.6/49.4	51.9/53.6	57.5/59.0	63.4/64.6	68.2/69.5	72.5/73.8	75.2/76.6	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4
Birmingham	52.4/54.7	56.6/58.5	61.1/62.6	64.6/65.3	68.4/70.2	72.4/74.5	76.8/78.1	78.4/79.7	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	62.2/64.2	56.2/58.5
Boston	35.6/38.6	41.1/43.3	46.7/48.3	51.5/53.1	56.7/58.4	56.8/58.6	66.3/68.1	69.6/71.1	70.2/74.1	72.1/73.4	70.9/72.1	67.6/69.2	54.2/56.2	49.3/51.3
Chicago	34.6/39.1	40.9/43.8	47.5/48.8	52.7/54.7	57.9/60.5	63.1/66.1	68.0/71.2	71.6/74.0	73.7/75.1	73.8/75.4	71.7/72.0	68.8/70.7	52.8/55.3	45.9/48.6
Cincinnati	39.6/43.1	45.4/48.1	51.4/53.3	56.4/58.6	61.5/64.0	65.2/67.0	71.2/73.0	73.4/75.2	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	55.9/57.1	48.6/50.9
Cleveland	34.7/38.8	40.3/43.2	46.2/47.8	51.8/53.9	57.9/60.3	63.5/65.7	68.2/70.2	71.2/73.0	72.7/74.2	72.5/74.2	70.9, 72.7	68.5/70.6	64.7/67.1	59.5/61.8
Dallas	55.5/59.6	60.1/63.7	64.2/67.3	68.4/71.1	72.6/75.0	77.2/78.8	81.1/82.2	83.3/84.8	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	68.5/69.4	61.4/63.1
Denver	35.9/39.1	40.4/43.2	46.3/48.6	51.1/53.4	55.2/57.4	60.0/62.1	65.4/67.5	69.7/71.5	72.1/73.7	72.5/74.0	71.8/72.2	67.3/78.6	50.8/52.8	44.5/47.2
Detroit	33.1/37.2	39.3/42.1	45.6/47.1	51.0/52.8	56.5/58.7	62.3/64.4	67.3/69.9	70.6/72.1	72.5/73.5	72.3/73.6	71.0/72.5	67.5/69.5	51.9/54.1	45.8/47.9
Kansas City	41.9/45.9	48.6/51.3	54.7/56.7	59.9/61.7	64.6/66.4	69.4/71.2	74.2/76.0	78.0/79.6	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	58.1/61.2	50.7/53.9
Los Angeles	55.4/57.4	56.6/58.4	58.1/59.7	58.8/61.3	61.4/62.8	62.5/64.0	63.9/65.4	65.4/67.0	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	62.7/64.2	60.5/62.1
Minneapolis	29.9/32.5	37.3/40.3	44.7/47.9	51.3/54.4	57.2/60.2	62.2/64.9	66.6/69.1	70.3/72.5	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	49.8/51.7	40.4/44.5
New Orleans	60.6/63.0	63.4/65.7	67.4/69.1	70.7/72.1	73.8/74.9	77.0/78.1	79.9/80.9	81.0/81.9	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	70.5/71.9	64.6/66.8
New York	38.7/41.3	43.6/46.0	49.0/51.0	54.6/56.3	60.6/62.1	65.9/67.5	70.4/72.2	73.6/75.0	75.2/76.3	75.1/76.3	73.6/74.9	71.0/72.5	57.0/58.6	51.8/53.2
Philadelphia	40.8/43.5	45.6/47.9	50.8/52.6	56.2/58.0	62.3/64.0	67.5/69.2	71.5/73.1	74.1/75.4	75.8/76.6	75.1/76.3	74.5/73.3	72.1/70.6	66.8/68.5	61.6/63.5
Pittsburgh	36.0/40.6	43.9/46.5	48.0/49.8	53.1/55.1	58.7/60.9	63.5/65.8	67.4/69.7	70.2/72.0	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	52.0/54.4	46.2/48.2
St. Louis	42.9/46.3	48.6/51.5	54.5/57.0	59.8/63.3	64.0/66.6	68.7/71.5	73.5/76.2	76.9/79.0	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	58.1/60.5	51.0/53.9
San Francisco	52.4/55.1	52.4/54.2	53.2/55.0	54.3/55.9	55.9/57.4	57.5/59.1	58.8/60.5	59.6/61.0	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	58.5/60.2	56.4/57.9
Seattle	43.6/44.7	45.8/47.2	48.2/49.9	51.0/52.9	54.2/56.3	56.9/58.5	59.3/60.4	61.7/62.7	63.6/64.6	63.8/65.0	62.7/64 1	60.8/62.0	51.0/52.5	41.8/43.8



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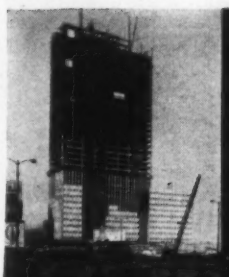

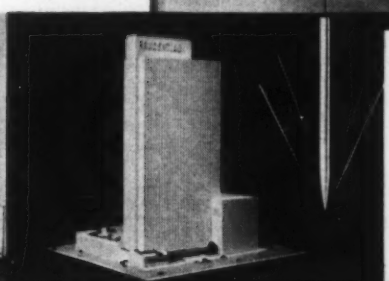

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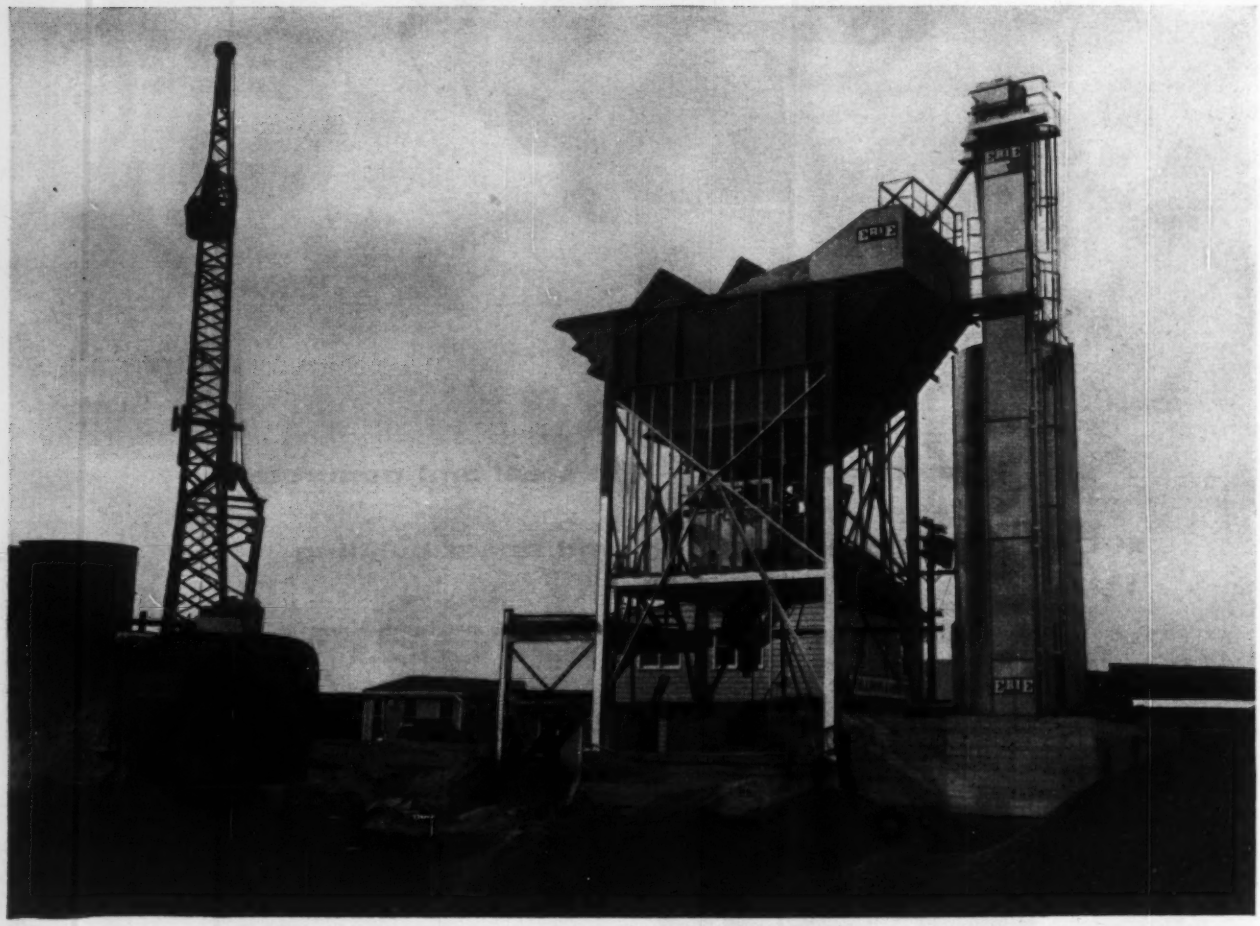

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The product is designed for use with protected metal, cement asbestos board, aluminum or painted galvanized sheets for construction of such permanent buildings as warehouses, foundries, low-cost gymnasiums, assembly and manufacturing plants and airplane hangars.

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The insulation board also provides sound absorption values—NRC.75 on 1-in.—in addition to serving its prime purpose as thermal insulation.

The material has a tan, rippled-textured appearance softened by the mat adhered to the exposed face. Surface fibers on the board are matted and the addition of the facing provides an interior side that can be painted.

The boards are light in weight and are therefore easily installed. Application is from the outside of the building and scaffolds are required only on the outside of the walls. The grids are simply formed with tees and purlins and the boards laid in place in the opening. Boards may be fabricated to fit areas where cut-to-size pieces are necessary.

The product is rated incombustible when tested in accordance with Federal Specification SS-A-118a.

Fiberglas Industrial Building Insulation is said to have long life, dimensional stability and will not expand, contract or buckle when exposed to changes in temperature and humidity.

Since the product does not include a vapor barrier on the warm side of the insulation, it is recommended for dry-occupancy buildings only. Owens-Corning Fiberglas Corp., Toledo 1, Ohio.

.25 Caliber Powder Tool Weighs 6 lb, Is 13 in. Long

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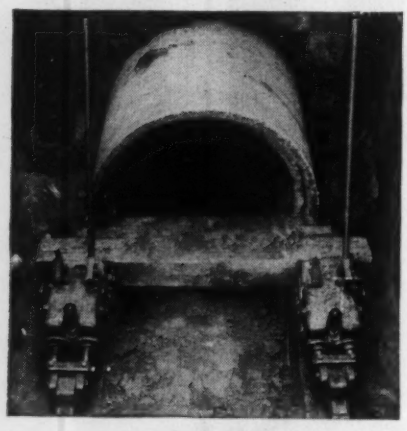

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caliber drive but will handle nearly all jobs in its lighter caliber, according to the manufacturer.

The driver features a snap-open breech action with automatic cartridge extractor, molded rubber pistol grip and foregrip, with the rest of the tool in polished chromium finish. It "field-strips" into just three segments.

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The "330" uses 56 different sizes and kinds of drive pins which makes it applicable to electrical construction, plumbing, heating and ventilating work, plastering, wood and steel construction and general construction. POWDER TOOL CORP., 7527 S. W. MACADAM AVE., PORTLAND, ORE.

Water Can and Cooler Line Said to Give Long Service

A new water can and cooler line features a special galvanized material that reportedly does not flake away and causing early rusting and deterioration.

The Bull's Eye line is soldered and sealed throughout for vacuum-tight construction to provide dead-air insulation. The design is said to insure perfect fitting of the lids. Available in four sizes—1½, 2, 3 and 5 gal. either with or without fiber-glass insulation and semi-recessed faucets. List prices are $4.10, $4.60, $5.10 and $8.25 for the dead-air insulated cans without faucets. ACTON MFG. CO., INC., 605 SO. SUMMIT ST., ARKANSAS CITY, KAN.

A-C Scraper Is Heavy on Horsepower

The new Allis-Chalmers TS-360 motor scraper is a rubber-tired bruiser with a 15-yd struck and 20-yd heaped capacity and a newly-designed 280-hp diesel engine.

To accommodate the heavy power package it was necessary to beef up and modify gears, shafts and bearings —the final drive gears, for instance, are not only larger and heavier, but the tooth design has been changed to provide more even tooth loading and therefore longer life. With the new power train, it is said that rim pull at all speeds is considerably increased for better performance.

One of the most fundamental changes in the scraper is the introduction of a main frame that makes possible unit or component assembly. In other words, a major assembly such as the engine can be removed for servicing without removing the transmission or the clutch can be removed without disturbing the engine.

Selective power steering is also a feature of the new scraper. A single hydraulic valve provides a controlled flow system in which a slight movement of the steering wheel uses a low pump pressure to give slight, fine control. Full movement of the steering wheel sends full pump pressure to the actuating cylinder to provide easier control when turning tight corners.

(Continued on page 58)

New, Unique Installation of Acousti-Celotex Tile Permits Completely Flexible Integrated* System

Sinclair Oil Building, 155 North Wacker Drive, Chicago
Owner: John W. Galbreath & Co., Inc. • Architect: Holabird & Root & Burgee
Builder: Turner Construction Company • Acoustical Contractor: James L. Lyon Co.

Sinclair Oil's New Chicago Headquarters... Sound Conditioned, Light Conditioned, Air Conditioned

Throughout the 200,000 square feet of this outstanding new Chicago office building, the use of Acousti-Celotex Mineral Tile on the Acousti-Line® Suspension system, achieves three purposes: Besides completely sound conditioning every office on every floor, this efficient system allows complete flexibility of lighting fixtures and air conditioning diffusers.

Light fixtures may be taken out or relocated, direction of lighting changed. Air diffusers and ducts, in fact *any* ceiling element can be rearranged with minimum labor to suit the needs of the occupants. Because of exclusive Acousti-Line® Suspension, easy removal of tile at any point in the ceiling provides immediate accessibility to above-ceiling space for servicing utilities.

Improved Employee Efficiency—A ceiling of Acousti-Celotex Tile checks routine noise of machines and conversation in general and private offices, corridors and conference rooms. The result is reduced error incidence, lessened overtime, an overall increase in productivity.

Easily Maintained—Once installed, Acousti-Celotex Tile requires no special maintenance thereafter. It is of high sound-absorption value, has a surface of unusual beauty. And it can be washed *repeatedly* and painted *repeatedly* without affecting its sound absorbing properties.

* Acousti-Celotex incombustible Perforated Mineral Tile is installed on the Celotex Acousti-Line® Metal Suspension Ceiling, where tiles, light fixtures, and air diffusers become interchangeable parts of the ceiling. When a new arrangement is desired, units can be quickly, easily, *economically* relocated.

TRADE MARK

ACOUSTI-CELOTEX
REGISTERED U. S. PAT. OFF.
Sound Conditioning
Products for Every Sound Conditioning Problem

FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to The Celotex Corporation, Dept. Z-35, 120 S. La Salle Street, Chicago 3, Illinois.

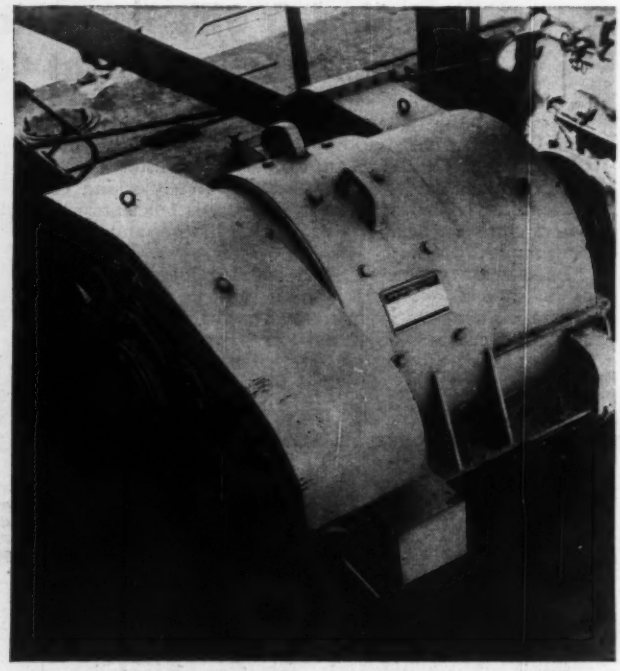
THE CELOTEX CORPORATION, 120 SOUTH LA SALLE STREET, CHICAGO 3, ILLINOIS
IN CANADA: DOMINION SOUND EQUIPMENTS, LTD., MONTREAL, QUEBEC

ENGINEERING REPORTS:

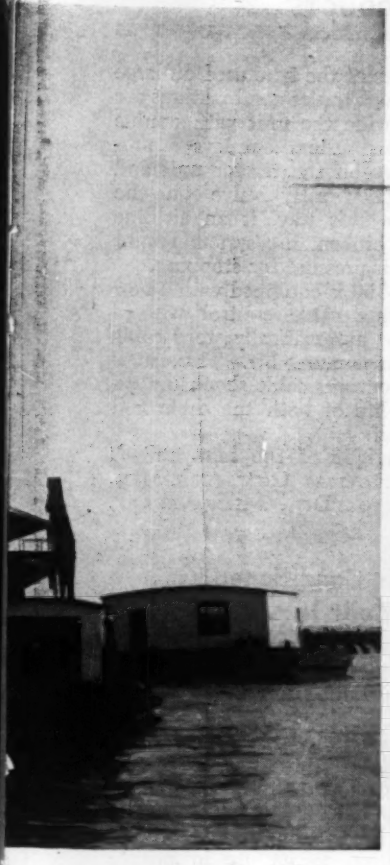
MOVING 1500-POUND BOULDERS with ease, the "Hydro-Québec" will deepen the 3300-foot-wide, 15-mile-long canal to 35 feet.

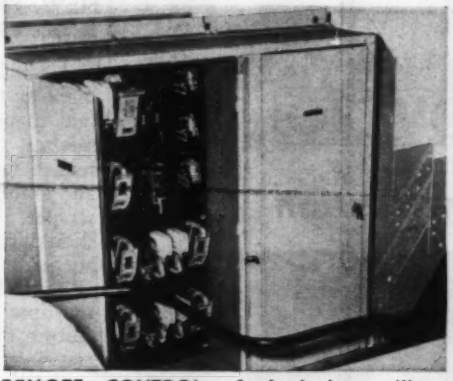
G.E.-powered dredge speeds Beauharnois

STURDY, HEAVY-DUTY induction motor powers pump that sucks up 28-in boulders. Motor was specially designed to absorb severe vibrations, load irregularities and overloads.

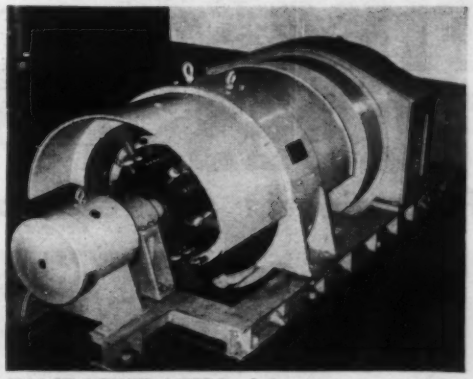


HIGHLY RESPONSIVE, amplidyne-controlled d-c motor drives 35-ton cutter. Ladder mounted and operating up to 45° tilt, it must stand vibration, jarring shocks of cutting operation.

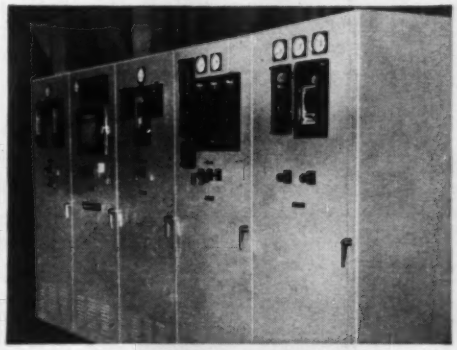




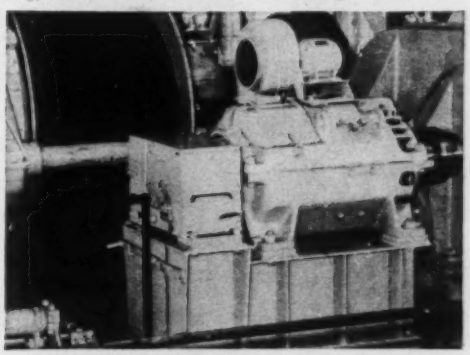
REMOTE CONTROL of dredge's auxiliary motors at centralized location is provided by General Electric remote motor controllers.



EXACT POWER NEEDS of d-c cutter motor are reliably furnished by sturdy, efficient, high-response, General Electric motor-generator set.



DEPENDABLE HIGH-VOLTAGE motor protection is provided by heavy-duty, G-E, metal-clad switchgear with draw-out circuit breakers.



COMPACT, RUGGED armored d-c motors operate ladder hoist and hauling winches, meet strict commutation and overload requirements.

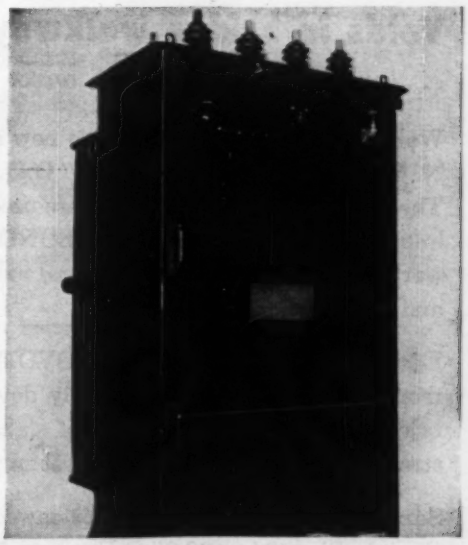
hydro-electric project

Ellicott design uses G-E equipment for more reliable performance on round-the-clock schedule

The "Hydro Québec" will operate 24 hours a day except in winter months clearing the Beauharnois Canal, a diversion of the St. Lawrence River. This project will provide more water for the expanding Quebec Hydro-Electric Commission powerhouse. Ultimately, the canal will serve as a unit of the St. Lawrence Seaway.

Long-life dependability of electrical equipment was essential to the success of the dredge on this demanding schedule. Because of this, Ellicott Machine Corp., Baltimore, Md., the builder, used G-E products in an engineered system to provide the major power components of the vessel. Years of engineering experience and skill were made available by G.E. to the customer and his consulting engineer. G-E application engineers worked closely with them to select the right equipment and combine it into the most economical, highly reliable power system for the dredge.

Productivity of heavy construction tools can be sharply increased by proper electrification. G-E engineers will work with you on design and application of electrical systems for your heavy construction equipment. Contact any G-E Apparatus Sales Office, or write General Electric Co., Section 664-34, Schenectady, N. Y.



RELIABLY SUPPLYING dredge power system, six G-E transformers filled with non-flammable Pyranol* insulating liquid reduce voltage transmitted via cable from shore substation.

*Reg. Trade-mark of General Electric Company

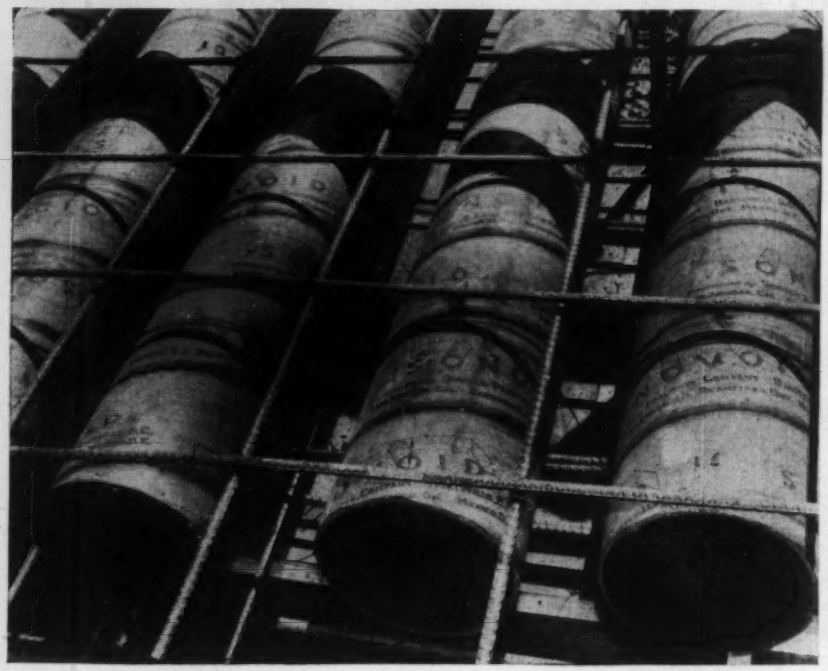
Engineered Electrical Systems for Heavy Construction Tools

GENERAL ELECTRIC

FIBRE TUBES

SONOVOID®

for voids in concrete construction



11th St. Bridge, Charlotte, N.C.; Rea Construction Co., Charlotte, Contractors; Frank T. Miller, Greensboro, Consulting Engr.

Voids in bridge walkway reduce weight!

. . . low cost SONOVOIDS make it possible.

Walkways on both sides of this new street bridge in Charlotte, N. C. contain voids created by 9″ O.D. SONOVOID Fibre Tubes. These low-cost SONOVOIDS were used to reduce weight without impairing structural strength. SONOVOIDS displace the low-working concrete below the neutral axis to eliminate dead weight and save reinforcing steel.

Easy to handle, low-cost SONOVOID Fibre Tubes save time, money and materials. Specifically developed for use in concrete bridge deck, wall, floor and roof slabs . . . prestressed and post-stressed precast units or units cast in place.

Supplied in specified lengths or sawed to your requirements on the job. Sizes 2″ to 36.9″ O.D. up to 50′ long.

See our catalog in Sweet's

For complete technical data and prices, write

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NEW PRODUCTS

Air brakes of the type used on large highway truck-trailer combinations are said to provide the unit with double safety. This system employs a protective valve on the tractor unit and an emergency relay valve on the scraper. In this way, if an air line should be broken, the system retains adequate air pressure for stopping.

The TS-360 is equipped with a new multiple disc cable control with a feature that automatically stops cable travel at maximum lift. This, it is reported, prevents cable shock and extends the life of both the cable and control unit.

Total weight of the new unit is 49,000 lb. Allis Chalmers Mfg. Co., Tractor Div., Milwaukee 1, Wis.

Room Air Conditioner Can Be Built Into Wall

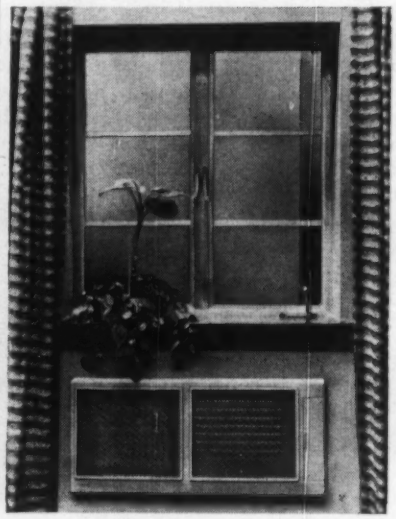
More than 350 model homes will soon be equipped with a new type of low-priced, built-in room air conditioners.

Called a Builder's Model, the specially designed unit fits into the wall of a room; its virtually flush, ductless design eliminates overhang, inside the room and outside the house.

In addition to its use in private dwellings, the unit is being made available directly to builders of apartment houses, motels, offices and factory buildings.

Several apartment house builders are said to be considering the unit. With this type of conditioner a landlord has the opportunity to give the potential tenant the privilege to accept or reject air-conditioning, basing his rent accordingly. The wall opening in which a unit is installed may be opened or closed, at will.

In appearance, the conditioner is



similar to a radiator grill. The unit is inserted in an opening under a window or along any outer wall and is 15 in. deep, 14 in. high and 32 in. wide. Various capacities are available according to the sizes of the rooms to be cooled. Each unit is individually controlled. TYWELL MFG. CORP., 5702 FIRST AVE., BROOKLYN 19, N. Y.

Pre-mixing Grout and Mortar Takes Out All the Guesswork

Embeco is now available in premixed grout and mortar. With the mixtures, no longer do the best laid plans of engineers need go astray. The mixes contain laboratory-controlled quantities and qualities of cement, sand and Embeco blended thoroughly; all that's necessary is to add water.

In the past, one of the principle difficulties in obtaining a grout or mortar mix with the proper physical characteristics was that the sand employed was seldom of the right type or particularly clean. According to the manufacturers, the Embeco mixes contain a well-graded, clean, sharp silica sand that is the best available for the recommended applications.

The cement used is a non-air entraining normal portland type and as with the Embeco material.

Both the grout and the mortar are described as tough and oil and water resistant. Specially prepared iron particles in the mix add reinforcement as well as iron oxide which increases oil and water resistance.

The mixes are designed to be nonshrink and afford considerable compressive strength—from 8,000 to 12,000 psi at 28 days depending on the consistency of the mix when it is installed. Reportedly, less water is required to produce a flowable mixture with the Embeco mixes than with plain cement and sand, and strength is thereby increased. THE MASTER BUILDERS CO., 7016 EUCLID AVE., CLEVELAND 3, OHIO.

Patching Material Usable On Any Clean Surface

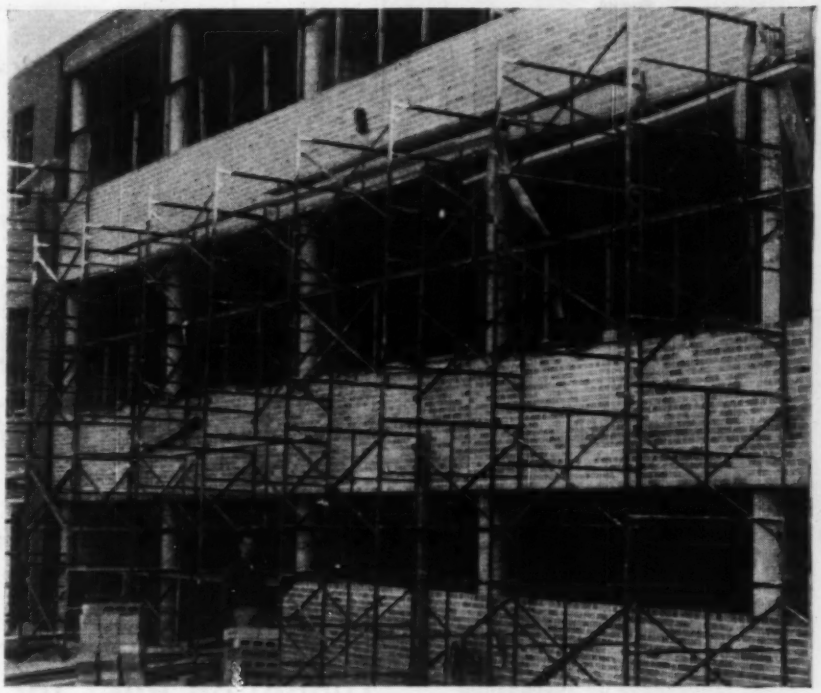
Vyniflex is a new floor patching and resurfacing material that is reported to give perfect adhesion to any clean surface—even if it is damp—to assure feather-edge patching, grouting, repointing of tile or brick or resurfacing.

The material is designed for floors subject to acids, alkalies, salts, oils, fats, grease, water, slip-hazards, trucking or abrasion. It is said to be usable on exterior or interior concrete, wood, asphalt, metal, brick or composition. Overlays can be made at $\frac{1}{8}$ in. and it's ready for use in 18 to 24 hr. FLEXROCK CO., 3649 FILBERT ST., PHILA. 1.

Sonotube®

FIBRE FORMS

for round columns of concrete



Robert Smalls High School, Beaufort, S. C.; Young Lumber Co., Contractors; Heyward Singley, Architect

Round columns save construction time!

. . . low cost SONOTUBES make it possible.

SONOTUBE Fibre Forms were used to form the round concrete columns for this Beaufort, S. C. high school.

Low cost SONOTUBES save construction time and money because they are quickly and easily erected and require minimum bracing. No form maintenance or storage is required.

For all types of institutional building . . . schools, churches, hospitals . . . and for other type structures as well, SONOTUBES provide a fast, economical method of forming round columns of concrete.

Approved by architects and engineers, widely used by contractors everywhere.

In 31 sizes, from 1″ to 36″ I.D. up to 50′ long. Can be ordered in specified lengths or sawed to your requirements on the job.

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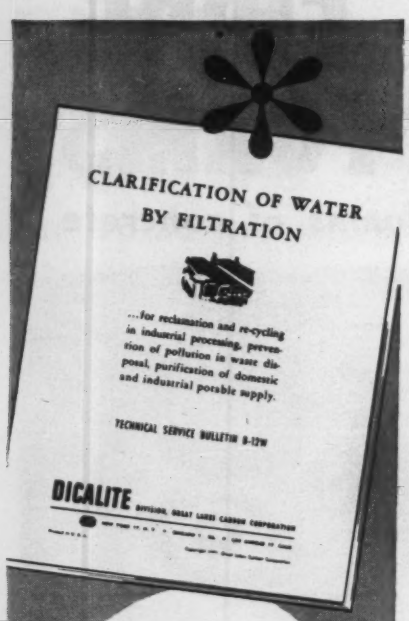
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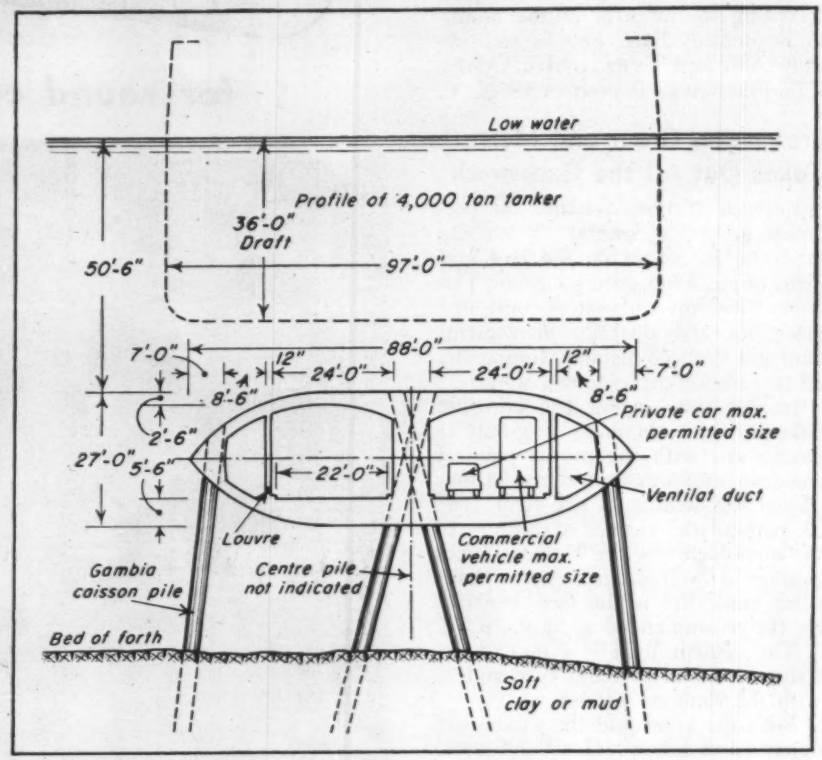


Tunnel on Piles for Scotland's Forth

Proposed as an alternative to erecting a high level-bridge, a tunnel set up on caisson piles has been recommended as the most economic solution to a new crossing of Scotland's Forth.

To be built of concrete units precast in a graving dock at the river's edge, the new tunnel would parallel a famous railway bridge whose appearance over the Forth would have been damaged by the proposed bridge.

With two 22-ft roadways in the tunnel, its outside shape would resemble a giant flattened tube, running like a ribbon on stilts above the river bed but beneath the deepest draft ships. The bed of the Forth is primarily mud at this point and unpredictable settlements along with water currents would make unsure the footing for a tunnel which "floated" on the river bed. The Gambia piles recommended for the tunnel supports are a new type of foundation caisson.

The tunnel would not run all the way under the river but would be approached by roadways running out to pier heads at the tunnel faces in the river.

Costing about $15 million, the tunnel would be available to traffic in three years from construction start. The structure would be much cheaper to maintain than a high-level suspension bridge which would have to be painted frequently to withstand the elements.

Gale winds whipping down the Forth are also a consideration in the choice of a tunnel over a bridge. Winds at the present railway bridge reach velocities of 80 to 125 mph at rail level and have reached 145 mph at the top of the steel cantilevers. Winds of this speed might easily blow small vehicles right off a high-level bridge.

It is estimated that in constructing a tunnel instead of a bridge some 40,000 tons of scarce English steel might be saved. Tunnel construction would draw heavily on local materials like sand and aggregate which are to be had in abundance.

The plan for the tunnel was submitted to the Minister of Transport by Sir Alexander Gibb and Partners, Westminster, England.

U. S. Puts Up $23 Million Toward Egyptian Projects

The U. S. has agreed to allocate some $23 million toward four major Egyptian economic projects: improvement of highways, installation of a

potable water supply system, improvement of the Port of Alexandria and inland waterways, and purchase of equipment for government machine shops.

Egypt will spend some $32 million to complete the projects, which are part of a 10-year development program.

Under the agreement U. S. engineers will survey, design and construct a 62.1-mi road from Kafr El Zayat to Alexandria on the Cairo-Alexandria highway. In addition, a highway construction training center and highway equipment pool will be established near Cairo. Egyptians trained at the center, together with equipment provided by the U. S., will be used on other projects under the 10-year highway development program.

Installation of the new potable water supply system is now under way at Abou Homoss, in the northern delta. The U. S. will finance purchase of $7.4-million worth of pipes and equipment necessary to complete the project.

Channels in the port of Alexandria will be widened and deepened, and earth removal and cleaning work will be carried out in the main channels of the Nile River as well as major canals. U. S. funds will provide tugboats, barges, dredges and draglines for the work.

The fourth part of the agreement calls for U. S. assistance in the form of modern equipment for the Ministry of Public Works' new machine workshops.

International Briefs . . .

• **Big development budget**—A six-year development plan now before the Syrian Parliament calls for an estimated budget allocation of some $238.4 million. It includes these construction projects: Yusef Pasha dam on the Euphrates River to irrigate some 740,000 acres; a network of roads linking producing and marketing areas; an extended railway network system.

• **Snowy Mountains changes**—Three engineers of Ebasco Services, Inc., New York City, have started a complete investigation into economic and technical aspects of Australia's Snowy Mountains hydro-electric scheme. The experts are expected to recommend changes that will make the scheme acceptable to the states of Victoria and New South Wales, sites of the project. Two aims of the study: to decrease the price for hydro power and to adjust completion date targets. (For background on problems of the scheme see ENR, Nov. 11, 1954, p. 46.)

How to restore and preserve costly masonry structures with **D-J Mortar, Thorite, Thoroseal and Thoroclear** *even though masonry looks beyond repair!*

Only the bare skeleton of cornice remains after years of disintegration.

To repair, all loose material was cut out and complete surface was wire brushed in preparation of THORITE treatment.

AFTER Brush and trowel coat of THORITE, nonshrink patching mortar was used to restore this masonry to its original lines. A two-coat application of THOROSEAL was applied to beautify and protect the surface. Nonsagging THORITE can be used to model any masonry structure back to its original lines.

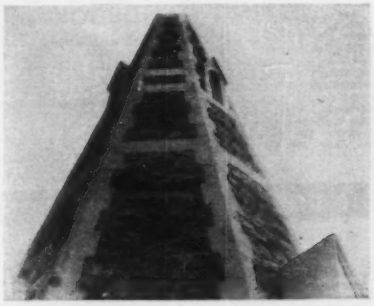
Second Episcopal Church of Boston, Brookline, Mass.

Above photos show how vines grew over stone structure and hid most of damaged masonry.

Vines were cut away from building and disintegrated joints grouted with D-J Grouting Mortar.

Stone trim was then given two coats of THOROSEAL. Entire surface received a coat of transparent THOROCLEAR.

ALL MASONRY NEEDS PROTECTION



Stretcher stone work treated with D-J Grouting Mortar and entire stone surface THORQCLEARED.

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Standard Dry Wall Products, Inc.

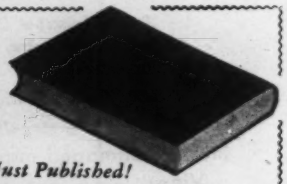
NEW EAGLE, PENNSYLVANIA, U.S.A.

PRESTRESSED CONCRETE STRUCTURES

Third Edition—Just Published!

Offers practical methods for better design and improved application of prestressed concrete. Gives important data on statically-determinate structures and continuous beams. Tests of prestressed concrete are discussed, including studies of creep of steel and concrete, behavior of beams when tested to breaking point, and the problem of buckling during prestressing. More than 50 actual applications of prestressed concrete are described in detail, and illustrated by photographs, diagrams, and plans. **By Gustave Magnel, Member Royal Belgian Academy. Third Edition, 345 pp., 330 illus., $8.00**

THE STRAIN GAGE PRIMER



Just Published!

A practical guide to best methods of using strain gages for accurate results. Covers all areas of the subject, from picking the right gage for a particular job, through cementing and damage-proofing, and interpreting the strain data in terms of important stresses. Includes worked-out examples of stress-strain relation, techniques for measuring principle stresses directly, data on latest American and foreign strain gages and their properties, etc. **By C. C. Perry and H. R. Lissner, 304 pp., 180 illus., $6.00**

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Gives you a vast compilation of data and methods for the most effective uses of piping . . . principles that influence the design, construction, and use of piping systems. Covers steam power-plant piping, building heating systems, plumbing systems, refrigeration piping, hydraulic power transmission piping, refinery piping, and many others. Revised Fourth Edition features data on formulas for pipe wall thicknesses, gas and air piping, and allowable stresses. **By S. Crocker, Mech. Engr., Ebasco Services, Inc. Rev. 4th Ed. 1376 pp., 763 illus., $10.00**

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MEN AND JOBS

AGC Presidency

George C. Koss of Iowa heads contractors group

George C. Koss, president of Koss Construction Co., Des Moines, Ia., was installed last week as the 1955 president of The Associated General Contractors of America (p. 21). He is the third Iowan to head AGC.

Born in Boone, Ia., Koss attended Phillips Exeter Academy, Exeter, N. H. and later enrolled in civil engineering at Harvard University. He left college at the end of his third year to work on a construction job in Peru and in 1929 joined the Koss Construction Co. Founded by his father, George W. Koss, in 1914, the firm is now one of the largest concrete paving companies in the country.

Since Koss became president in 1947, the company has put down something like 9,000,000 cu yd of paving—enough to cover a strip 100 mi long and 22 ft wide each year. By using two pavers on each job, Koss has been able to cut paving time for a mile to 2½ days, compared to a prewar average of a mile a week.

Although its administration headquarters are in Des Moines, the company maintains permanent equipment yards in Topeka, Kans., and Springfield, Mo. Most of its operations are in Kansas and Missouri. During World War II, the Koss company built the runways for 14 airbases scattered through Iowa, Nebraska, Missouri, Kansas and Oklahoma.

Koss has lived in Des Moines since he was a boy and in 1952 received the city's Community Award for his substantial contribution to the city's welfare. Among the civic organizations he has headed up are Des Moines' Plan and Zoning Commission, Community Chest and the Greater Des Moines Committee. Koss is a past president of the Iowa chapter of the AGC.

Other Iowans who have headed the AGC are W. A. Klinger (1936-37) and Forrest W. Parrott (1947-48), both of Sioux City.

American Bridge Division Names New Vice President

U. S. Steel's American Bridge Division has appointed A. A. Porter vice president in charge of erecting. Porter has been the division's erecting manager since 1945.

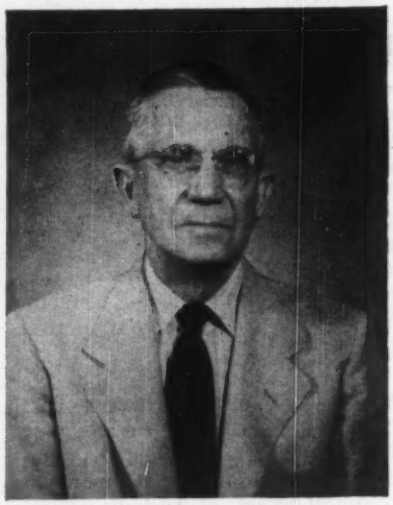
Born in Massachusetts, he received a civil engineering degree from Virginia Polytechnic Institute and joined American Bridge as a draftsman in 1926. Structures recently erected under his supervision include the 40-story Republic National Bank and Office Building, Dallas, Texas, and the 41-story Prudential Building, Chicago, Ill.

Porter succeeds C. William Doerr, retiring from American Bridge after 42 years of service. Doerr has been in charge of all erecting operations of the division for the last nine years and supervised the erection of such structures as the United Nations Headquarters, Sunshine Highway Bridge over Tampa Bay, and the Alcoa Building.

Newman E. Argraves Assumes Connecticut Highway Duties

Newman E. Argraves, senior member of the consulting engineering firm of Newman E. Argraves and Associates, New Haven, Conn., became Connecticut's new State Highway Commissioner this month, succeeding G. Albert Hill, who had held the post since 1947.

Born in Maine, Argraves studied civil engineering at Massachusetts University and the engineering schools of Tufts College and Yale University. He was associated with Stone & Web-

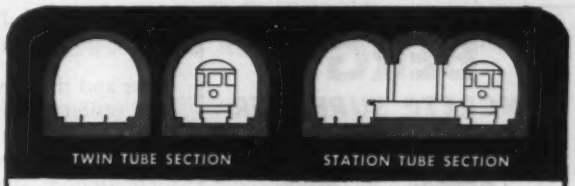


F. A. Gruver Retires

Frank A. Gruver, chief of the operations division of the Albuquerque District, Corps of Engineers, has retired, after 31 years of service. He began his career with the Corps as a rodman on the Mississippi River in the Memphis District, and was later assigned to the Little Rock District. Gruver was chief of the construction division in Albuquerque before becoming chief of operations.

BLAW-KNOX STEEL FORMS . . .

simplify construction of Chicago's new Congress Street Subway



In Chicago's newest subway, Contractor S. A. Healy is forming the stations *with the same forms used for the tunnels*, and without removing them from the excavation! An extra panel is simply inserted into the forms as shown above to provide the arch for the stations with minimum trouble.

IT'S ANOTHER WAY BLAW-KNOX HELPS CUT CONCRETING COSTS

This simple solution to the problem of making stations in a subway tunnel is typical of the way Blaw-Knox Steel Forms and Blaw-Knox Engineer's Consultation Service can help reduce the number of necessary steps in your forming operations, save time and materials, and cut concreting costs.

It will pay you to call in Blaw-Knox engineers in the preliminary planning stages of your jobs, to solve difficult forming problems *before* they're on the drafting board. Write or call today!

WRITE FOR BULLETIN 2430
It contains special Blaw-Knox Steel Forms suggestions and details about the Consultation Service available to any contractor without obligation.

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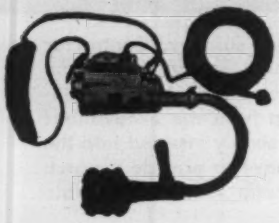
"BERG"
CONCRETE SURFACER
MODEL A



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4-ft. handle sections
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6-ft. aluminum handle sections
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This patented "Haivala" float eliminates the work and cost of applying drier to concrete. Prevents riffing of finished job by gravel at surface. Lightweight, magnesium alloy. Flat face with raised edges, 42" x 8". Order No. 42KFM. For each 6-ft. take-down aluminum section, order No. 6KAL. 4-ft. section, order No. 4KAL. Check, money order or C.O.D. Fully guaranteed.

1,056 tools

FREE TOOL CATALOG — 1,056 tools for trowel trades. 100-page illustrated book. Send name.

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1928 Walnut, Kansas City 8, Mo.

MEN AND JOBS

ster and the Boston & Maine Railroad in various engineering and construction capacities, and in 1935 joined Stone & Webster Engineering Corporation as structural designer. The new commissioner later became chief engineer of design for Haller Engineering Associates and F. H. McGraw & Co. and formed his own firm in 1944.

Howard S. Ives was simultaneously appointed deputy highway commissioner. He has been with the highway department for over 30 years and was engineer of surveys and plans at the time of his new appointment.

G. Albert Hill, former commissioner, has joined the organization of Frank L. Ehasz and Associates, consulting engineers, Long Island City, N. Y., as senior consultant and research associate on highway matters. He will be associated with the firm's new office in Hartford, Conn.

Michigan Highway Engineer Named Deputy Commissioner

Carlos A. Weber, assistant chief engineer of the Michigan Highway Department, has been promoted to the position of deputy commissioner-chief engineer, succeeding the late Harry C. Coons.

Weber has been with the department for 35 years and has served it in many capacities. His work in the highway field has been nationally recognized by appointment to the design committee of the American Association of State Highway Officials and to the geometric design committee of the Highway Research Board.

A native of Michigan, he majored in civil engineering at Michigan State College.

Men and Jobs Briefs . . .

• **Military—Capt. R. B. Krum** replaces **Cmdr. J. A. Bentley** as district civil engineer and district public works officer for the 17th Naval District at Kodiak, Alaska . . . **Col. Elmer E. Kirkpatrick, Jr.,** now in the Far East, will take over as district army engineer at Jacksonville, Fla., in May, succeeding **Col. Herman W. Schull, Jr.,** who will become lieutenant governor, Canal Zone Government.

• **Careers—Glen T. Kellogg** succeeds **Fred L. McDonald** as chief engineer and director of the Arkansas Health Department's Bureau of Sanitary Engineering . . . **Robert S. Millar,** with American Water Works Co. for 31 years, joins the Denver Water Board as executive assistant . . . Veteran city engineer, **Reuben Rountree** becomes acting public works direcor, Austin, Texas . . . **D. Jackson Faustman,** Sacramento, Calif. traffic engineer, has a four months' traffic survey assignment in Djakarta, Indonesia.

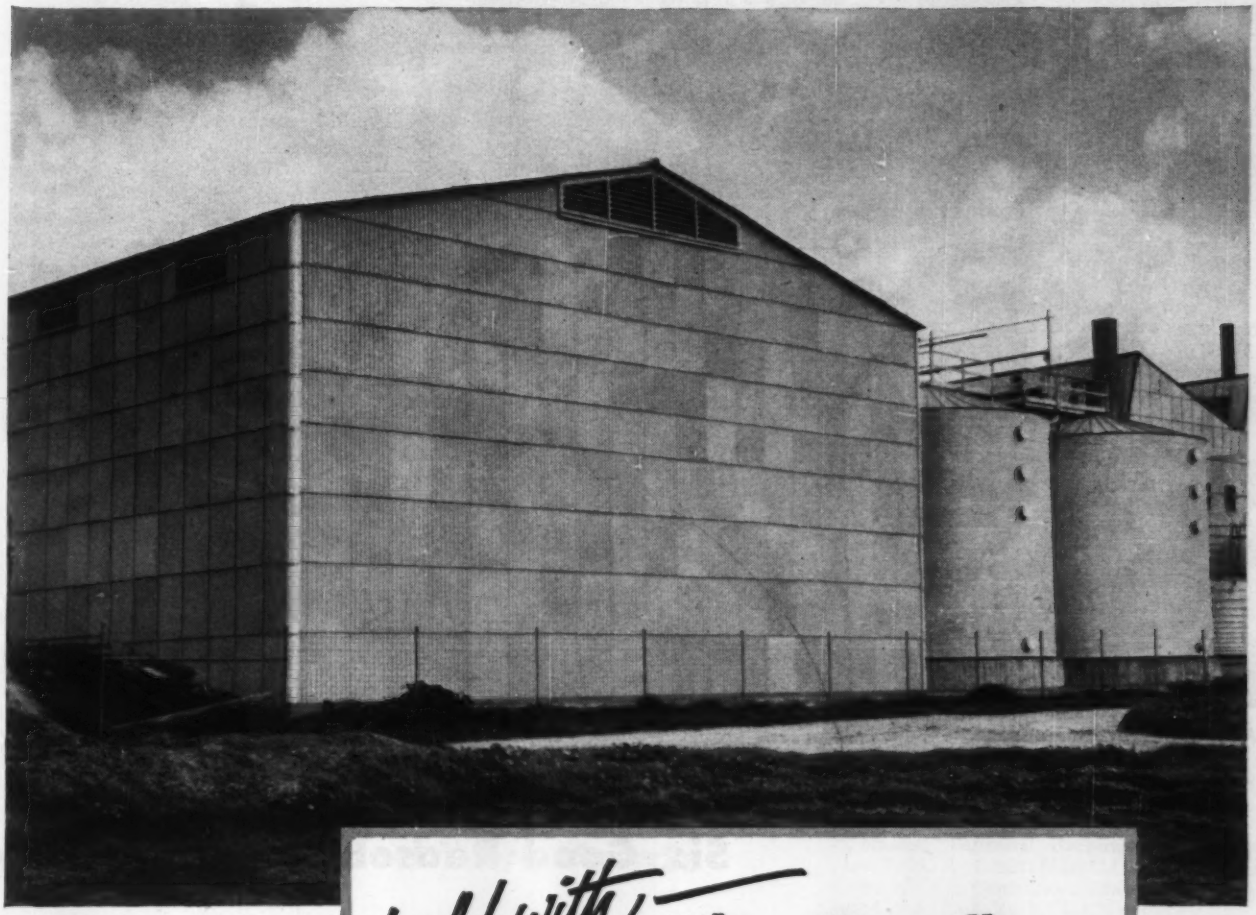
• **Business—Fred W. Argue** is elected a vice president of Stone & Webster Engineering Corp., Boston—he'll continue as engineering manager, a job he's held since April 1954 . . . **Richard M. Troy** and **Homer Ferguson** become associates of Peterson, Hoffman & Associates, architects and engineers, Toledo, O. . . . **Capt. Paul A. E. Flux,** CEC, U. S. Navy (Ret.) joins Crandall Engineering Co., Boston, as vice president and consultant—he was formerly senior design engineer, Connecticut State Department of Highways . . .

M. L. Liverman is named vice president and chief engineer of Southern Engineering Co., Charlotte, N. C. . . . **Abram Clark** becomes engineer of bridges and buildings for Baltimore & Ohio Railroad Co. . . . **Stephen D. Moxley** is elected president of American Cast Iron Pipe Co., succeeding **Charles O. Hodges,** retiring after 38 years of service . . . **Mac Silvert,** former chief engineer for Ben C. Gerwick, Inc. establishes his own consulting engineering practice in San Francisco, specializing in construction engineering . . .

Koppers Company, Inc. elects **W. F. Munnikhuysen** as chairman of the board and **Fred C. Foy** as president and chief executive officer . . . **Hobart C. Ramsey,** Worthington Corporation chairman, becomes a board member of the National Industrial Conference Board . . . **W. M. Jaekle** is named chief engineer of Southern Pacific Company's Pacific lines with headquarters in San Francisco . . . **Wayne F. Strong** is elected president of Iron Fireman Manufacturing Co. . . . **George Trivan** is appointed to the newly created post of general traffic manager for Gar Wood Industries, Inc. . . . **C. Howard Black** becomes general manager of General Electric's construction materials division.

• **Retired—Fred W. Smith,** president and co-founder of Klug & Smith Co., Milwaukee, Wis., engineering and contracting firm, after 43 years . . . **W. J. VanLondon,** engineer-manager of the Houston expressway system, from the Texas Highway Department, which he joined in 1921 . . . **John A. Wilson,** vice president of Pittsburgh Plate Glass Co., after nearly 25 years with the company.

No costly maintenance problem here



Used as siding for this recently completed building, Johns-Manville Corrugated Transite will provide years of durable service and fire safety with a minimum of care. It needs no paint or special treatment to preserve it.

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For maintenance-free exterior walls and roofs, plus protection from fire, rot and weather

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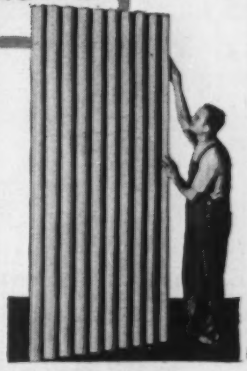

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Six Good Reasons Why Pittsburgh

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2. 100 Park Avenue

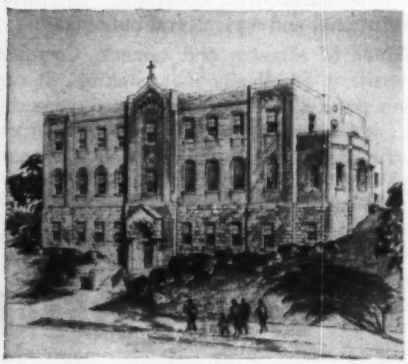
First, Steeltex, the combination welded steel mesh with its own built-in pliable form attached, requires no additional forms or reinforcement for giving shape and strength to concrete floors and roofs (see note below right).

Second, Steeltex can be installed much faster than other types of forms and reinforcement for concrete floors.

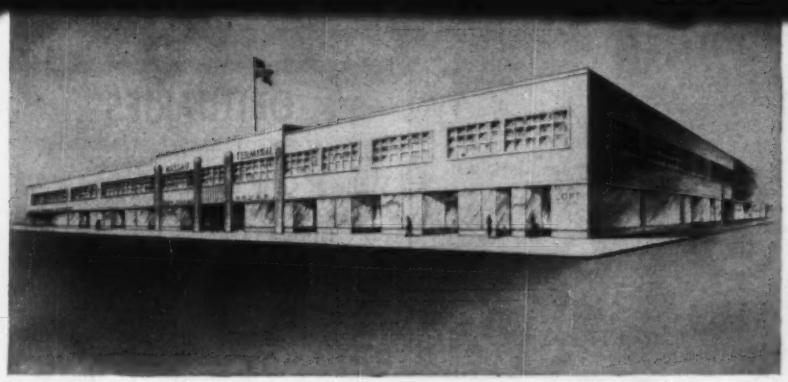
Third, Steeltex saves concrete.

Fourth, Steeltex minimizes leakage,

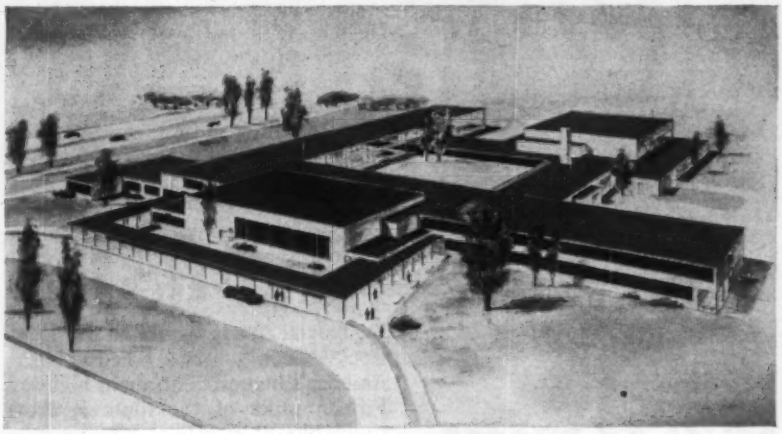
3. Franklin Simon Store



4. Immaculate Conception Convent



5. Nassau Terminal Building



6. Wantagh High School

Steeltex® And Welded Wire Fabric Buildings In New York City

saves clean-up expense.

Fifth, Steeltex assures a strong floor.

Sixth, Steeltex costs less than other reinforcing materials and systems.

On these two pages are pictured $34.2-million worth of recent buildings in New York City and suburbs in which Steeltex or Pittsburgh welded wire fabric or both were used to reinforce concrete slabs.

For details . . . **read story at right.**

1. Abraham Lincoln Houses, New York City. *Architect:* Skidmore, Owings and Merrill—Tandy and Forbes; *Structural Consultant:* William Hoffberg; *Contractor:* H. R. H. Construction Corp. This is one of 75 housing projects built by the New York City Housing Authority, whose reputation for sound and economical construction has attracted nationwide attention. It was built at a cost of $14.2 million and consists of 14 buildings housing 1,286 families (total population over 5,000—larger than many towns). In all buildings Steeltex or Pittsburgh welded wire fabric was used for floor reinforcing.

2. 100 Park Avenue, New York City. *Architect:* Kahn & Jacobs, New York, N. Y.; *Consulting Engineer:* Jaros, Baum, and Bolles, New York, N. Y.; *Contractor:* George A. Fuller Company, New York, N. Y. Built at a cost of $15 million, the building incorporates Pittsburgh Steel Products Company's welded wire fabric reinforcing throughout the floors.

3. Franklin Simon Store, Garden City, Long Island. *Architect:* Herbert Beidler, Chicago, Ill.; *Contractor:* Andrew Weston, Inc., Woodmere, Long Island, N. Y. This is a typical example of the Franklin Simon chain of shopping stores incorporating Steeltex floor lath in floors and roof. Steeltex is used widely for construction of suburban stores of this type.

4. Convent of the Immaculate Conception, Jamaica Estates, Long Island. *Architect:* Charles M. Spindler, Brooklyn, N. Y.; *Contractor:* Caristo Construction Co., Brooklyn, N. Y. This $600,000 convent has just been completed. Its construction incorporates Steeltex floor lath over steel joists in floors and roof.

5. Nassau Terminal Building, Hempstead, New York. *Architect:* Harold Carlson, Garden City, N. Y.; *Contractor:* Marvin Construction Corp., New York City; *Contractor Supervision:* Fred T. Ley & Co., New York City. This bus terminal, containing 33 stores, over sixty thousand square feet of office space, twenty-four bowling alleys, and accommodating twenty-three buses at one time, was built at a cost of $1,500,000. Steeltex floor lath was used over steel joists in the floors and roof.

6. Wantagh High School, Wantagh, Long Island. *Architect:* Frederic P. Wiedersum, Valley Stream, N. Y.; *Contractor:* Jonwal Construction Company, Inc., Mineola, N. Y. This Long Island high school, built at a cost of $2.5 million, was completed last fall. Steeltex floor lath was used over steel joists in the floors and roof.

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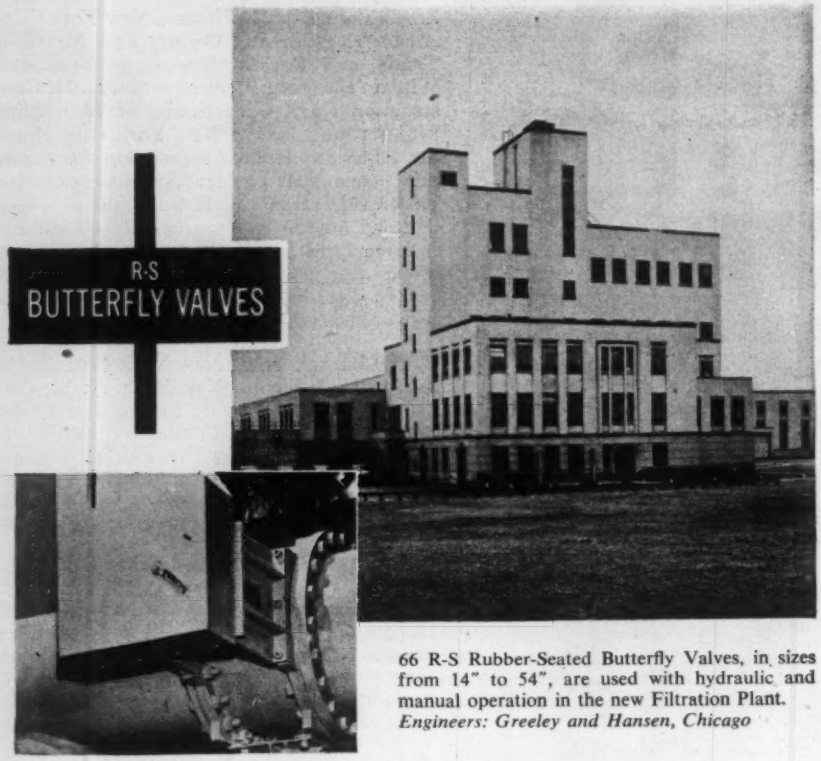

66 R-S Rubber-Seated Butterfly Valves, in sizes from 14" to 54", are used with hydraulic and manual operation in the new Filtration Plant.
Engineers: Greeley and Hansen, Chicago

NIAGARA FALLS, N.Y. RELIES ON RUGGED R-S RUBBER-SEATED BUTTERFLY VALVES

The new Niagara Falls Pumping Station and 32 MGD Filtration Plant is one of the few big plants in the country almost entirely equipped with butterfly and cone valves. At this Filtration Plant, for instance, 66 R-S Rubber-Seated Butterfly Valves were specified for their ability to provide drop-tite, shut-off compactness and ease of operation. Satisfactory performance since the plant began operation in 1953 has resulted in an additional order of 42 R-S Rubber-Seated Butterfly Valves to rehabilitate the old Niagara Falls Filtration Plant.

Positive closure is assured by the wedging action of the valve disc periphery against a tough, flexible rubber seat, which seals the shaft bosses as well. Specially compounded rubber defies abrasion and resistance to the flow of materials for longer valve life.

If you would like to benefit by the design advantages and economics available in our complete line of butterfly, cone and ball valves, contact our local representative or write S. Morgan Smith Company, York, Penna.

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AFFILIATE: S. MORGAN SMITH, CANADA, LIMITED, TORONTO

OBITUARIES

William C. Prescott, 85, former construction superintendent for American Bridge Co., Pittsburgh, died March 1 in Toledo, Ohio. He had been with the firm 55 years upon retirement in 1938.

Edward A. Doran, 62, former superintendent of construction for the New York State Department of Public Works, died Feb. 22 in Albany, N. Y. He retired in 1952 after 28 years of service with the state.

William A. Colt, 98, builder of Trail Ridge Road over the Continental Divide in Rocky Mountain National Park, died March 5 in Longmont, Colo. He worked for 20 years on railroad projects, completing the 300-mi Missouri Pacific Railroad grading from McCracken, Kan., to Pueblo, Colo., in 1887. He was 73 when he received the federal contract to build the 17-mi Rocky Mountain road, billed as North America's highest continuous highway. Fifteen miles of the route is above timberline at elevations ranging from 11,000 to 12,183 ft.

Frederick L. Weisenheimer, 72, former assistant city engineer in Los Angeles, died March 3 in Lynwood, Calif. He was assistant division engineer in sewer design for 20 years and was instrumental in construction of the city's major sewage programs until his retirement in 1946. A graduate of Purdue University, he joined Los Angeles' public works department in 1911 as a draftsman.

Harold N. Sutton, 63, chief city building inspector at Charlotte, N. C., died March 5. He was assistant state highway engineer for South Carolina before going to Charlotte in 1928 as field representative for Portland Cement Co. He joined the city's engineering department in 1930.

William C. Culliton, 80, a Buffalo, N. Y., contractor for more than 50 years, died March 1. His firm, William C. Culliton General Contractors, was responsible for excavation for many plants as well as suburban sewer and water lines in the area.

Hamilton M. Wilson, 66, owner of H. M. Wilson Co., Philadelphia engineering firm, died Feb. 22. A graduate of Columbia University, he was associated for several years with Otis Elevator Co. After World War I he founded his own power plant engineering office.

NEW 6-WHEELER

with cost-cutting ruggedness

This new INTERNATIONAL 60,000-pound GVW 6-wheeler has what it takes for rugged construction work. It's built to absorb severe loading shocks—with ability to transport heavy equipment over-the-road at maximum safe speeds.

In this model RF-230 you'll find the all-new INTERNATIONAL 212-hp. Royal Red Diamond 501 engine which delivers 444 lb-ft torque at 1600 rpm. And there are other features of extra value including hydraulic full-power steering, 12-volt electrical system. Engine and all components are exactly matched to assure maximum operating economy, minimum maintenance and long life.

This newest INTERNATIONAL is Tough-Job engineered like all INTERNATIONALS — has all the performance, strength and stamina qualities that have made INTERNATIONAL the 6-wheel sales leader for 20 straight years. One of ninety-two 6-wheel models for every 6-wheel job. Get full facts from your INTERNATIONAL Dealer or Branch.

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92 models from 22,000 to 90,000 pounds GVW, in conventional and cab-over-engine designs, for highway and off-highway use. All heavy-duty engineered, with wheelbases, transmissions, and axle ratios for every need. Engines from 130 to 356 horsepower. Choice of gasoline or LPG fuel system. Diesel engines available in models with GVW ratings of 30,000 pounds and over.

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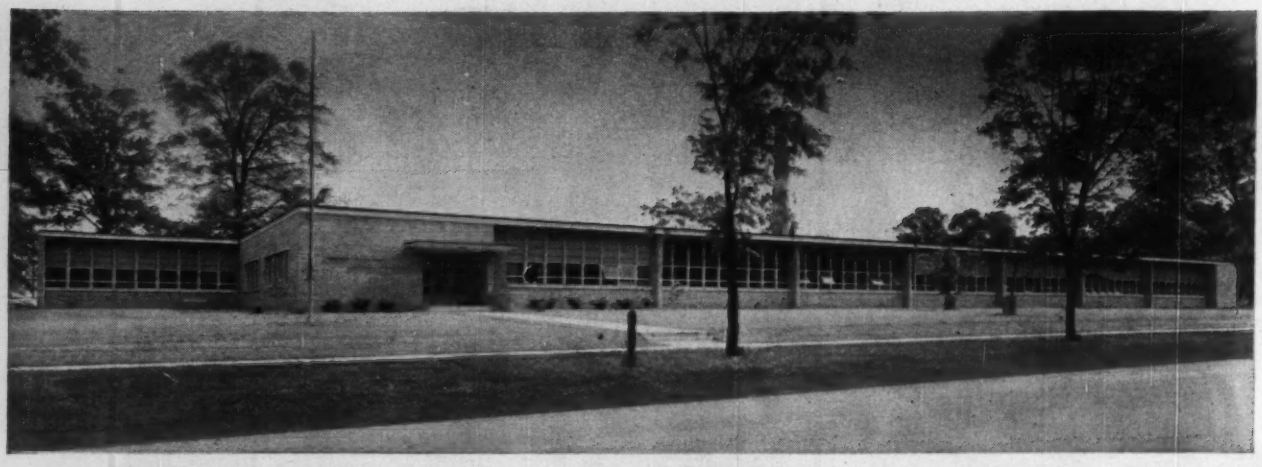
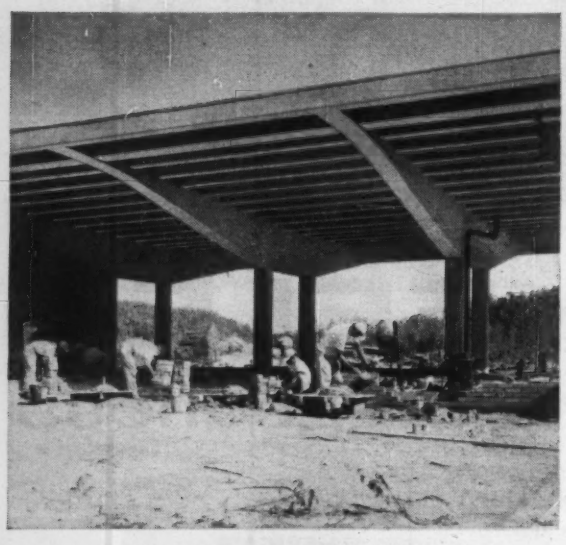
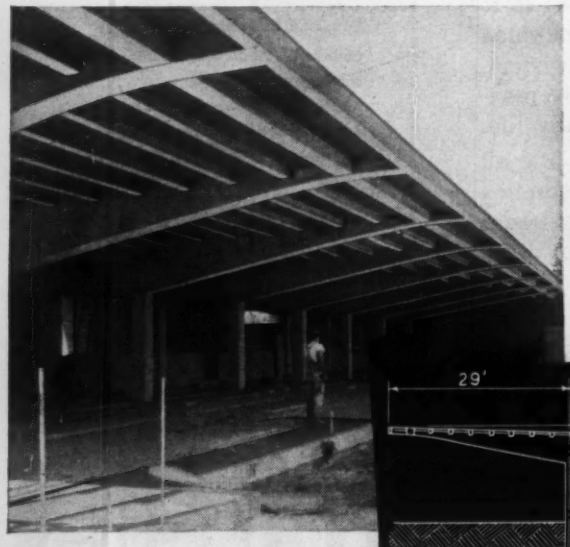


Merle Sidener School, Indianapolis. Architects: Daggett, Naegele & Daggett; engineers: Fink & Roberts; contractor: Cannon Construction Co.



Above: The all-concrete roof covers two rows of outside classrooms and a central corridor. With its overhang, the roof is 68 ft. wide. Below: 29-ft. concrete cantilever beams extend from corridor columns over the classrooms and exterior walls.



Right: cantilever beams extend across auditorium from opposite walls, meet at center. Floor here is lowered 4 ft.

Concrete and Cantilever Design Cut Costs for Modern School

Attractive, modern appearance distinguishes this fine school, completed at a cost of only 92¢ per cu. ft.—20 to 25 per cent less than the cost of other new buildings of comparable size and quality in the area.

Concrete cantilever beams at 17′ 2″ centers are an outstanding feature in the design. Supported on twin concrete columns that form a central corridor, they extend beyond the exterior walls of the classrooms as roof overhang. Concrete ribs between the cantilever beams carry lightweight precast concrete panels that form the roof.

In the auditorium, cantilever beams from opposite walls join at the center of the room to form a 58-ft. roof span (see drawing below). Exposed concrete masonry, used for partitions and backup throughout the structure, assures maximum firesafety, economy and durability.

Concrete construction for schools is moderate in first cost, means lower maintenance expense and extra long life. These factors add up to ***low annual cost***—which pleases school officials and taxpayers alike.

Write for free booklet on concrete school design and construction, distributed only in the U. S. and Canada.

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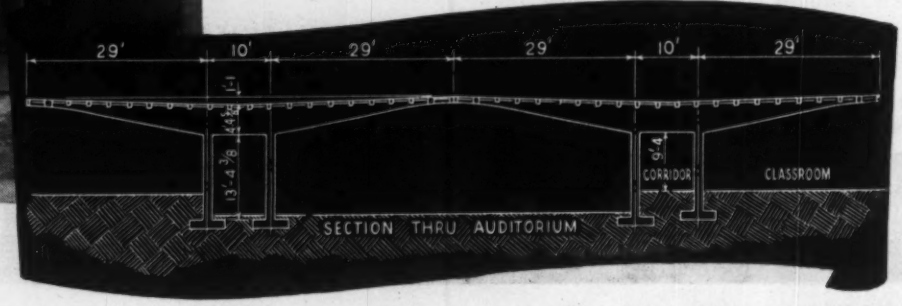

LEGAL

Refusal to Sign Contract Because of Error in Bid

The Berkeley Unified School District of Alameda County, California, asked for bids for the construction of two school buildings to be submitted by 8 p.m. on June 14, 1950. The James I. Barnes Construction Co. first learned of the invitation to bid on June 2. A large part of the work had to be sublet to other contractors, and their bids began to come in on the morning of June 14. The last one was so late that it had to be telephoned to the employee who actually presented the bid. The telephoning was completed at 7:45 p.m. allowing no opportunity to recheck the figures.

When bids were opened the Barnes Co. bid was below the next highest bidder by approximately $150,000. An immediate check revealed that an item of about $86,500 for the plumbing work had been omitted in totaling the bid.

The representative of the School District was immediately notified of this mistake and was shown the work sheets as evidence that the cost of doing the plumbing work had been omitted from the bid.

The contractor thereupon offered to proceed with the contract if the omitted amount would be added to its bid. The School District refused, insisting that the contractor enter into a contract for the price bid. Upon the contractor's refusal to do this, it readvertised for bids, and awarded the contract to another contractor at a price of $131,200 in excess of the amount bid by the Barnes Co. It then brought action to recover such sum as damages for breach of contract. The court denied the School District a recovery, which judgment was affirmed on appeal.[1]

The appellate court in its opinion stated; "The evidence produced at the trial, particularly the facts and circumstances under which Barnes submitted its bid to plaintiff are sufficient to show that Barnes made an honest error in failing to include in its bid the amount estimated for the plumbing. The record also reveals that Barnes acted in utmost good faith in the preparation of its bid, and continued to so act after determining its error.

"It is true that in the usual case the contractor is bound by his bid, and the board's acceptance constitutes a binding contract. However, where as in this case, an honest error was made in computing the amount of the

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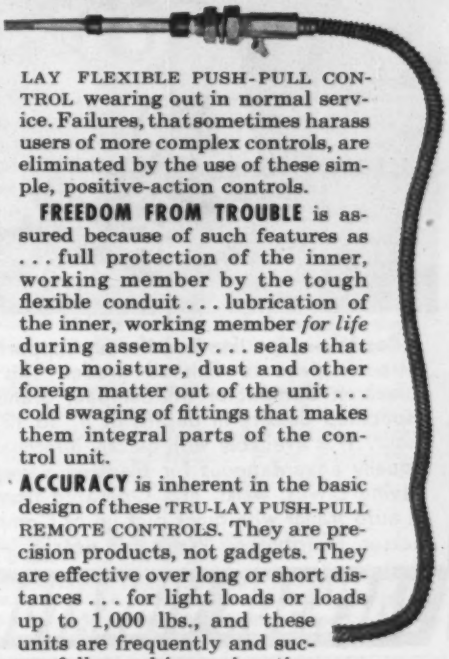
Engineers for 30 leading manufacturers told us why their construction equipment performs better for users with TRU-LAY PUSH-PULL REMOTE CONTROLS.

These engineers have adopted TRU-LAY PUSH-PULLS on a wide range of equipment (power shovels, excavators, winches, graders, road oilers, dump trucks, engine driven pumps, crushing plants, snow plows, etc.) for the Remote Control of Transmissions, Hydraulic and Air Valves, Brakes, Clutches, Throttles, Chokes, Governors, Power Take-Offs, Feed and Delivery Conveyors and other applications.

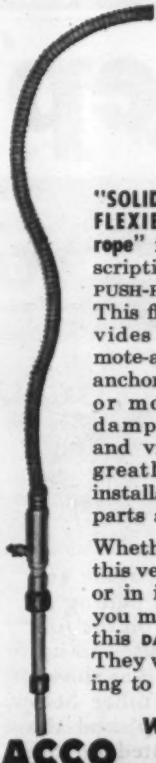
The net of what these engineers had to say collectively was this: These FLEXIBLE PUSH-PULLS make possible More Efficient Design . . . Dependable Operation of controls under the most adverse conditions (Hot as jet engines—Cold to −70° F.—Soakin' Wet—Abrasive—or just plain Tough) . . . Accurate, Precise Control . . . virtual Elimination of Maintenance.



LONG LIFE is a matter of record. We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action controls.

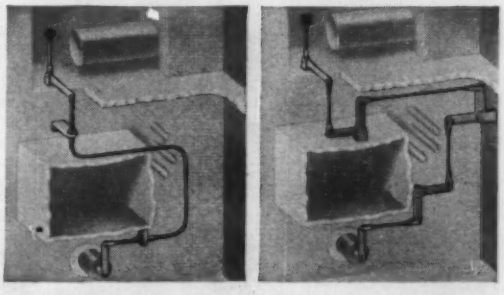
FREEDOM FROM TROUBLE is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the inner, working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

ACCURACY is inherent in the basic design of these TRU-LAY PUSH-PULL REMOTE CONTROLS. They are precision products, not gadgets. They are effective over long or short distances . . . for light loads or loads up to 1,000 lbs., and these units are frequently and successfully used in conjunction with Hydraulic, Air and Electric Controls.



to give you this simple and effective assembly

. . . rather than this complex (and expensive) series of linkages



"SOLID as a rod but FLEXIBLE as a wire rope" is a good description of TRU-LAY PUSH-PULL CONTROLS. This flexibility provides positive remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration, and greatly simplifies installation of controls by reducing the number of working parts and by making it possible to snake around obstructions.

Whether your interest is in a single application of this versatile and dependable PUSH-PULL CONTROL, or in its inclusion as a component of the product you manufacture, the six bulletins and booklets in this DATA FILE will answer your further questions. They will also provide you with the means of defining to us the application you may be interested in.

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AMERICAN CHAIN & CABLE

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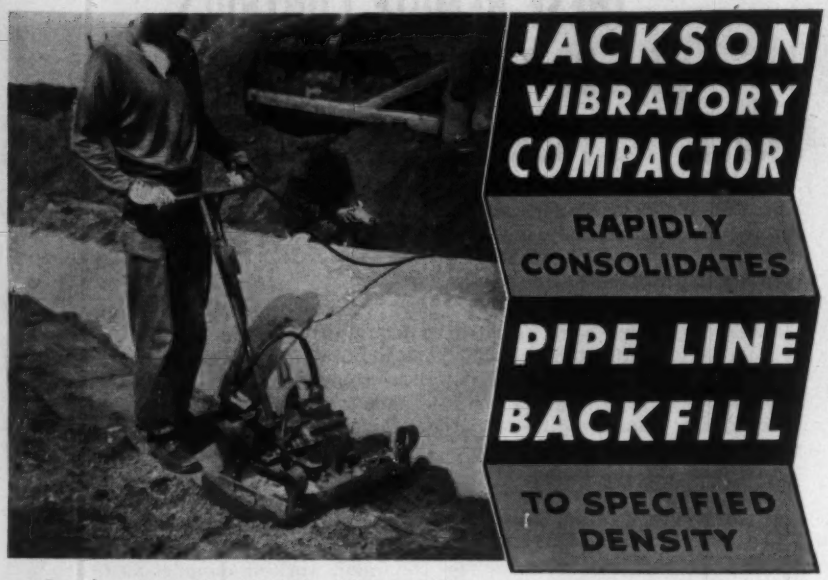

Result — pipe line is uniformly supported by compacted soil and top of trench stays to finished grade. This manually-guided, self-propelling Jackson Compactor will compact granular soils at optimum moisture to specified density in depths of 8" to 12" at the rate of 2400 sq. ft. per hour. It is available with quickly interchangeable base of 12" to 24" and equally advantageous for blacktop pavement widening and patching — paving drives, walks, etc. Operated from Jackson Power Plant mounted on auto trailer with quick pick-up of Compactor. For rent or sale at your Jackson Distributor. Write for details.

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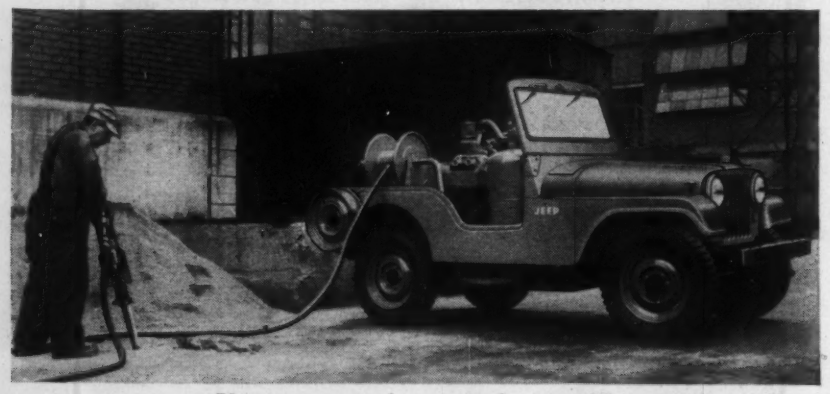

MOBILE POWER

You can save the cost of an auxiliary engine and the time lost in loading or towing it by putting an all-new 4-Wheel-Drive Universal 'Jeep' on the job. With power take-off, the 'Jeep' can be used to operate air compressors for pneumatic tools as shown above, electric power generators and other belt-driven equipment. Investigate the 'Jeep' and the auxiliary equipment that can be mounted on the 'Jeep' and operated by the 'Jeep' engine.

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bid, and the School Board actually had knowledge before accepting the bid that a clerical error had been made, it would be unfair to allow the School Board to take advantage of the contractor's mistake. M. F. Kemper Constr. Co. v. City of Los Angeles, 37 Cal. 2d 696, 235 P. 2d 7, 11.

"Plaintiff maintains that even if an honest error has been made, it nevertheless is entitled to recover damages under the law as stated in the Kemper case, supra. The basis of this contention is that the Kemper case states as one of the prerequisites to allowing the contractor relief that the plaintiff be placed in status quo. Where plaintiff is in a position to accept the second lowest bid this prerequisite is met."

The School Board also maintained that Section 18,051 of the local Education Code requires it to award the contract "to the lowest responsible bidder who shall give such security as the board requires, or else reject all bids. . . ."

As to this claim, the court held that since the Barnes Co. has notified the School Board that it would not enter into the contract, it had lost its status as being the lowest responsible bidder. Consequently the board could have awarded the contract to the next lowest bidder without readvertising for new bids.

The court in its opinion further stated: "It would be inequitable to allow plaintiff to recover damages in this case in view of the fact that damages resulted from plaintiff's choice of an alternative method, viz., readvertising instead of accepting the second lowest bid."

(1) Berkeley Unified School District of Alameda County vs. James I Barnes Construction Company, 123 F. Supp. 924, United States District Court N. D. California, Sept. 7, 1954.

Damages Due to Prevention Of Performance of Contract

"When under a valid contract to perform a specified work for a specified price, the contractor has done part of and has been prevented from performing completely through the wrongful intervention of the other party, the measure of the contractor's damages is generally, for the work actually performed, such a proportion of the entire contract price as the fair cost of that work bears to the fair cost of the whole work, and, in respect to the work not performed, such profits as he would have realized as a result of complete performance. Kehoe v. Borough of Rutherford, 56 N.J.L. 23, 27 A. 912; Sullivan v. Moffatt, 70 N.J.L. 4, 56 A. 304; Kitchell v. Crossley, 90 N.J.L. 574,

101 A. 179; Cavanagh v. Borough of Ridgefield, 94 N.J.L. 147; Sullivan v. Magnolia Const. Co., 96 N.J.L. 214."[1]

(1) Goldman v. Shapiro, 84 A. 2d 628.

Subcontractor's Obligations

"When a subcontractor undertakes to do a portion of the contract work according to plans and specifications binding on the general contractor, such plans and specifications become a part of his contract, and he assumes the obligation of the general contractor in relation to the particular part of the work to be performed. Ehret Magnesia Mfg. Co. Inc. v. Gothwaite, 80 U.S. App. D.C. 127, 149 F. 2d 829."[1]

In the above case, the contract was one to build a shopping center and contained a provision to the effect that the contractor was to take every reasonable precaution to protect life and property from damage on account of the work. The necessary excavation was sublet to another contractor.

The excavation was made with a power shovel, and during the course of the work damage was done to a brick culvert. The cost of making the necessary repairs was withheld from the general contractor, who then brought the action against the subcontractor to recover the sum so withheld. The court held that if the general contractor was liable for the damage done, then the subcontractor assumed the same liability towards the general contractor.

(1) Vappi & Co. v. Sullivan, 120 N.E. 2d 203, Supreme Judicial Court of Massachusetts, June 8, 1954.

Rights of Subcontractors

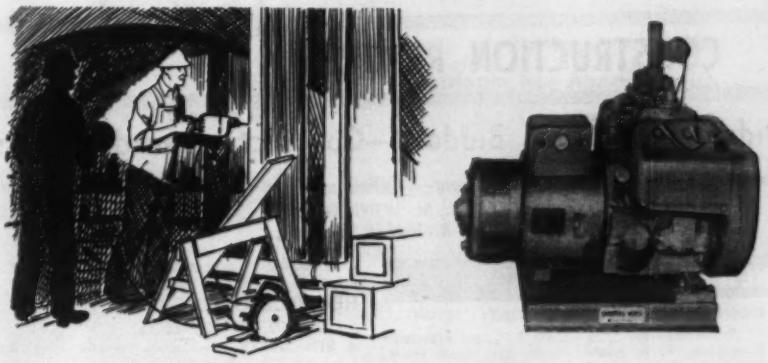
As a general rule, a subcontractor has no cause of action against the party for whom the work is being done, since no contractual relationship exists between the parties.[1] However, where the general contractor abandons the work and the owner agrees to pay the subcontractor if he will finish the job, such promise will be enforced.[2]

The subcontractor has no claim against a surety company that has given a bond to secure performance of the work. However, in many cases where the bond is to secure payment for all labor and material going into the work, the subcontractor has a right of action against the surety company.[3] It is common practice to require that the performance bond cover payment for all labor and material in contracts with government agencies, since under such contracts, the subcontractor cannot file a mechanic's lien.

[1]Majestic Mfg. Co. v. L. Riso & Sons Building Co., 27 N.Y.S. 2d 845, affirmed 261 App. Div. 1099.

[2]Reisler v. Silbermintz, 90 N.Y.S. 967, 99 App. Div. 131; Taylor v. Guinan 67 Misc. 262, 124 N.Y.S. 408, affirmed 205 N.Y. 615.

[3]Ramsay & Gatlin Const. Co. v. Vincennes Bridge Co., 50 F. 2d 600.



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Another Job Done Better With The ALL-NEW 'Jeep'®

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Beyond the road's end, where the going is rough and steep, you can depend on the sure-footed 4-wheel-drive pulling power of the Universal 'Jeep' to take you right to the job. With a 'Jeep' you can climb steep grades, maneuver your way in dense woods, traverse loose rock and sand—*and get there!* That is why the 'Jeep' has become essential equipment for engineers, surveyors, geologists, miners and lumbermen. Get a demonstration.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

R. I., Providence—BA 3/28—State R. I. and Providence Plantations, F. A. Adams, purch. agt., State House, Providence, Contr. 22, Blackstone Valley Interceptor, Sect. D, 36 and 42 in. sewer, 460 ft. tunnel, Central Falls, Cumberland and Lincoln. $600,000. Plans deposit $50. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs. CD 12/23/52.

▲† Rhode Island and Massachusetts—AAA FACILITIES—BA 3/30—U. S. Eng., 857 Commonwealth Ave., Boston Mass., Special AAA facilities (8 sites-4 batteries, at Foster, Rehoboth and Swansea, R. I. and Dighton, Mass. $2,500,000-$3,000,000. Plans deposit $50. Extended date. Leon Chatelain, Jr., 1632 K St. N.W. Wash. D. C. and Spector & Montgomery, Falls Church, Va., archts. Fay, Spofford & Thorndike, 11 Beacon St., Boston, Mass. engrs. CD 3/14.

BIDS ASKED—BUILDINGS

Conn., Norwich—SCHOOL—BA 4/12—City, Office of Purch Agt., City Hall, Norwich, East Great Plain Elementary School, New London Turnpike, $704,000. Plans deposit $60. Arthur E. Thomas, 28 Shetucket St, archt. CD 12/7/51.

Vt., Springfield—HOSPITAL—BA 4/12—Springfield Hospital, Ridgewood St., hospital alterations, addn. $600,000. Plans deposit $50. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., engrs.-archts. CD 7/16/52.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† Davison Constr. Co., Inc., 1306A Elm St., Manchester, N. H., LB $549,700, est. $500,000-$600,000. headquarters squadron supply, structural fire station, main post exchange, Portsmouth Air Force Base, ENG-19-016-55-83, PORTSMOUTH, N. H. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bid Mar. 10. CD 2/24.

▲ MASSACHUSETTS—Massachusetts Turnpike Auth., 80 Boylston St., Boston,
J. F White Contg. Co., 201 Alewife Brook Parkway, Cambridge, Mass. and Consolidated Constructors, North Attleboro, Mass. (joint venture) LB $4,719,719, est. $4,700,000. Contr. 51-092 hy. and bridge constr., Framingham, Natick and Wayland. Bids Mar. 10. CD 2/14.

Anderson Fairoaks Constr. Co., 145 South Marshall St., Hartford, Conn., LB $688,301, est. $700,000. Contract 283, Southwest Transmission Main, Section 1, from filtration plant, etc., West Hartford, HARTFORD, CONN. Bd. Contract & Supply, Metropolitan Dist., 115 Broad St., Hartford, Conn. Bids Mar. 10. CD 3/1.

BUILDINGS

LOW BIDS AND CONTRACTS

John A. Volpe Constr. Co., 54 Eastern Ave., Malden, Mass. CA Approx. $800,000. CLINIC BLDG., Pilgrim Rd. and Austin St., ROXBURY, MASS. Hospital Teaching Clinic, Pilgrim Rd. and Austin St., Roxbury, Mass. Bids Feb. 24. CD 2/8.

Nanni Building Co., Valley View Dr., Johnston, R. I. CA $524,000, est. $500,000. No. 540 HOS 3:5, main KITCHEN, etc. alterations, addns. Rhode Island State Hospital for Mental Diseases, HOWARD, R. I. State R. I. & Providence Plantations, F. A. Adams, purch. agt., State House, Providence, R. I. Bids Jan. 19. CD 2/1 under LB.

E. Leslie Archibald, Inc., 108 W. Shore Rd., Warwick, R. I. Owner Builds. $750,000. 15 unit BUSINESS CENTER, Warwick Ave., PROVIDENCE, R. I. Charles A. Randall, c/o owner, engr.-archt.

Joseph F. Kelly Co., Inc., 184 Front Ave., West Haven, Conn., CA, $579,800, est. $350,000, Parochial SCHOOL, Whitney Ave. and Gillis Rd., Spring Glen, HAMDEN, CONN. St. Rita's Roman Catholic Church, Rev. William A. Downey, 1620 Whitney Ave., Hamden, Conn. Bids Feb. 24. CD 2/15.

▲ Fusco-Amatruda Co., 59 Amity Rd., New Haven, Conn., CA, $1,660,280, Junior High SCHOOL Newhall St., HAMDEN, CONN. Town Bd. Educ., 2040 Dixwell Ave., Hamden, Conn. Bids Mar. 2. CD 3/8, under LB.

▲ Frouge Constr. Co., Inc., 141 North Ave., Bridgeport, Conn., LB $2,889,000, OFFICE for State Hy. Dpt., Wolcott Hill Rd., Proj. CP S-42, WETHERSFIELD, CONN. State P. Wks. Comr., State Office Bldg., Hartford, Conn. Bids Mar. 9. CD 3/1.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲† N. J., Fort Dix—QUARTERMASTER ADMINISTRATION—BA About 5/13—U. S. Eng., 2653 Abbottsford Rd., Phila., Pa., quartermaster administration bldg. $1,000,000. Edwards & Green, 17 S. 5 St., Camden, archts. CD 4/9/53, under LB.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW JERSEY—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
C. J. Langenfelder & Sons Co., Pulaski Hy., Baltimore, Md., LB, $1,779,678, grading, drainage, Contract PE-3, in connection with Pennsylvania Exten. of N. J. Turnpike from existing turnpike to Delaware River, Burlington Co. Bids Mar. 3. CD 2/3.

NEW JERSEY—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Horn Constr. Co., Inc., 2174 Hewlett Ave., Merrick, N. Y., LB $823,990, N-26-C, 24 piers for substructure of portion of North Terminal Ramps (Section B) in connection with Newark-Bay Hudson County Exten. of N. J. Turnpike, Jersey City, Hudson Co. Bids Mar. 10. CD 2/17.

▲ NEW JERSEY—New Jersey Turnpike Auth., Administration Bldg., New Brunswick,
Savin Constr. Corp., 10 Village St., East Hartford, Conn., CA, $5,707,338, Contract W-4 grading, drainage, paving, structures in connection with widn. N. J. Turnpike from north of Cranbury-South River Rd. to Woodbridge Interchange, Middlesex Co. Bids Feb. 25, awarded Mar. 10. CD 2/28, under LB.

▲† American Dredging Co., 12 S. 12 St., Phila., Pa. CA $1,190,796. maintenance dredging in Delaware River on Marcus Hook, Bellevue and Cherry Island Ranges, removal and satisfactory disposal of approx. 2,300,000 cu. yds. material to provide channel 40 ft. deep, 800 ft. wide, PENNSYLVANIA, NEW JERSEY and DELAWARE. U. S. Eng., 2635 Abbottsford Ave., Phila., Pa. Bids Feb. 1. CD 1/20.

PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
L. & H. Constr. Co., Bethlehem, Pa., CA $738,225, constr. substructures of Lehigh River and Pohopoco Creek Bridges and grading 0.4 mi. on Northeastern Exten. of Turnpike, (Sec. 36-EF), Mahoning Twp. and Parryville Boro, Carbon Co. Bids Jan. 26, awarded Mar. 9. CD 1/31 under LB.

† Trinity Paving Co., 1460 N. 52 St., Phila., Pa., LB $589,943. paving, Naval Shipyard, NOY 84676, Spec. 44294, PHILA., PA. Dpt. Navy, Phila. Naval Base, Phila., Pa. Bids Feb. 24. CD 2/10.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

General Asphalt Paving Co., 6851 Rising Sun Ave., Phila., Pa., LB $508,515, paving, International Airport, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. CD 2/19/46.

▲ Merritt-Chapman & Scott Corp., 260 Madison Ave., New York, N. Y. LB $29,894,081. Patapsco Tunnel Proj. for state roads, MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore 3, Md. Bids Mar. 10. CD 2/4.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Tallwood At Babylon Homes, c/o Bonded Realty Corp., Sunrise Hy., Lindenhurst, N. Y. Owner Builds. $1,000,000. 75 HOUSES, Deer Park Ave. and Hale Rd., BABYLON, N. Y.

▲ Galmor Homes, c/o Morris Rothstein, archt., 186 Joralemon St., Brooklyn 2, N. Y. Owner Builds. $3,750,000. 240 HOUSES, Avenue M and E. 89 St., BROOKLYN, N. Y.

▲ Gwin Development Corp., c/o Belsito Real Estate, 42 S. Union Rd., Cheektowaga, N. Y. Owner Builds. $1,828,000. 119 ranch HOMES, DEPEW, N. Y.

▲ Jacob Berg, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y. Owner Builds. $1,000,000 6 story APARTMENT, 80 St., south of Broadway, ELMHURST, N. Y. CD 2/16.

Woodhull Building Corp., c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, N. Y. Owner Builds. $810,000. 6 story APARTMENT, 83-30, 118 St., KEW GARDENS, N. Y. CD 1/26.

▲ South Park Estates Homes, c/o Edwin S. Voorhis, archt., 288 Sunrise Hy., Rockville Center, N. Y. Owner Builds. $2,600,000. 203 HOUSES, Roosevelt Ave., Southern State Parkway, MASSAPEQUA PARK, N. Y.

▲ Southcrest Homes, c/o Albert B. Meklenburg Organization, 1038 Northern Blvd., Roslyn, N. Y. Owner Builds. $2,000,000. 160 HOUSES, 42-acre tract Park Blvd., and McKinley St., MASSAPEQUA PARK, N. Y.

Lanzner & Posner, c/o Gustave Iser, archt., 95 Madison Ave., New York 16, N. Y. Owner Builds. $640,000. Garden APARTMENT, for 81-families, Carpenter Ave. and Quaker Hill Rd., MT. KISCO, N. Y.

▲ Five Boro Constr. Corp., 2 Lafayette St., New York 2, N. Y. LB $485,000, general constr.;
Dierks Heating Co., 43-32 33 St., Long Island City, N. Y. LB $679,700, sanitary constr.;
Goodrich Electrical Installation Co. Inc., 381 Fourth Ave., New York 10, N. Y., LB $367,900, electrical work for POWER PLANT BLDG. No. 122, Manhattan State Hospital, Wards Island, NEW YORK, N. Y. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Mar. 10. CD 2/7.

▲ Suburban Greens Homes, c/o Stanley Shaftel, archt., 89-47 163 St., Jamacia, N. Y. Owner Builds. $1,200,000. 75 HOUSES, Woodbury Rd., east of South Oyster Bay Rd., WOODBURY, N. Y.

Licata Brothers, c/o Livio Segalla, archt., 1646 Lemoine Ave., Fort Lee, N. J. Owner Builds, $500,000. 15 HOUSES on tract at Palisade and Virginia Aves., FORT LEE, N. J.

▲ State Builders, 11 N. Willow St., Trenton, N. J., Separate Contracts, $1,500,000. RESIDENTIAL DEVELOPMENT, Woodbury-Glassboro Road, WOODBURY, N. J.

▲ Stoffet & Tillotson, 2043 Eastburn Ave., Phila., Pa. CA $1,250,000. CLASSROOM, PHILA., PA. Temple University, Broad St. and Montgomery Ave., Phila., Pa. CD 2/3.

▲ Charles Tompkins Co., 907 16 St. N.W., Wash., D. C., CA, Over $1,000,000, Tompkins ENGINEERING BLDG., WASH., D. C. George Washington University, 2029 "G" St. N.W., Wash., D. C. Faulkner, Kingsbury & Stenhouse, Ring Bldg., Wash., D. C., archts.

SOUTH

BIDS ASKED—BUILDINGS

La., Thibodaux—ACADEMIC BLDGS., etc.—BA 4/5—State Bldg. Auth., Capitol Bldg., Baton Rouge, 45,000 sq. ft. academic bldgs. and gymnasium for Francis T. Nichols Junior College, $600,000. Plans deposit $50, Roth & Olivier Assn., Box 289, Thibodaux, engrs.

† Va., Fort Belvoir—OFFICERS QUARTERS—BA 4/21—U. S. Eng., First and Doubias Sts. N.W., Wash. 25, D. C. 2 bachelor officers quarters bldgs. $590,000. McGaughan & Johnson, 821 19th St. N.W., Wash., D. C., archts. CD 3/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

FLORIDA—State Road Dpt., Tallahassee.
Industrial Constr. Co., Box 2797, Jacksonville, Fla., CA $979,986. Dania Beach Bridge and approaches, incl. maintenance of traffic; constr., maintenance of detour; Miami rock base with bit. surf. tr., Type 1-A and

(Continued on page 76)

How one Ohio Contractor gets double-duty from 6 Tournapull prime-movers

Though Contractor C. F. Replogle, Circleville, Ohio, handles a large volume of work and bids in the toughest competition over a three-state area, he has a comparatively low equipment inventory. Behind his 6 C Tournapull prime-movers he quickly interchanges LeTourneau-Westinghouse trailing units to fit the job — 18-ton Rear-Dumps for shovel rock, 16-yard Scrapers for dirt. This way, 80% of his basic equipment investment (prime-mover plus one trailing unit) works *all the time* regardless of type of job.

For example, after 3 of his "C's" with scrapers wound up a dirtmoving job at Loudonville, he switched hauled units to Rear-Dumps. These then joined 3 other Tournapull Rear-Dumps owned by Replogle on relocation of a section of State Highway 7 along the Ohio River near Marietta. There the six LeTourneau-Westinghouse haulers were assigned to move blasted rock and shale from a 4-yd. Lima shovel on this 357,000-yd. job.

Move 480 yds. hourly

On a typical side-hill cut, haulers worked 2000′ cycles over grades ranging up to 30%. According to time studies, shovel filled the built-up Rear-Dumps with 4 passes in about 1½ minutes. Haul and return averaged 4 minutes. Dump and spot at the shovel took another minute, for a total cycle time of 6.5 minutes. Each "C", carrying 16 yards, completed 7 to 8 of the 2000′ cycles per 50-minute hour.

Three of the Tournapulls have now worked 11,000 hours each since their purchase in 1947. The other three machines, bought new in Sept., 1953, have recorded about 2,000 working hours each. Mechanical efficiency for the entire 6-unit fleet has averaged 95%.

"Gives us lowest-net-cost-per-yard"

Says Mr. Replogle, "We consider our C Tournapulls the finest machines on the market. Their low maintenance costs and high output give us the lowest-net-cost-per-yard. Their maneuverability is a great factor, especially on side-hill work."

You, too, will like the production and economy these job-proved LeTourneau-Westinghouse Rear-Dumps and Scrapers will give hauling rock or dirt. Tell us your job conditions . . . we'll send you more owner reports describing how these units handled work similar to yours. Judge for yourself how their high output, plus interchangeability between Scrapers and Rear-Dumps (as well as Bottom-Dumps, Cranes, and Flatbeds), can make more money for you.

Tournapull, Carryall—Trademark Reg. U.S. Pat. Off. RP-660-H-b

LeTourneau-Westinghouse Company PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Some of the important jobs Replogle has handled with his Tournapulls

1950 . . .

- Graded 4-lane U.S. Hwy. 40 east of Springfield. 300,000 yds.
- Graded site for Calco Chemical Co., St. Marys, West Virginia. 90,000 yds.

1951 . . .

- Graded for the new Ohio Power Company plant at Beverly, Ohio. 700,000 yds.
- Graded State Route 665 near Shadesville, Ohio.
- Moved 200,000 yards for Electro-Metallurgical Co., Marietta, Ohio.

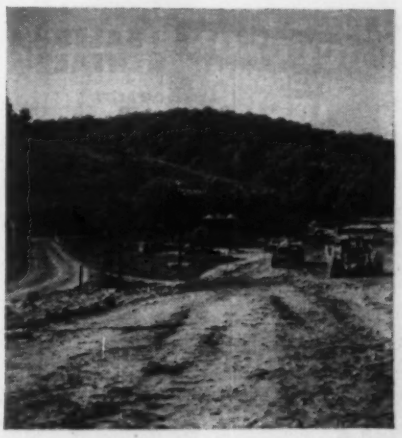
1952 . . .

- Completed State Hwy. 665 near Lockbourne Air Base, Ohio. 40,000 yds.
- Graded section of U.S. Hwy. 22 near Lancaster, Ohio. 60,000 yds.

1953 . . .

- American Gas & Electric Co., Lawrenceburg, Indiana. 600,000 yds.
- Electro-Metallurgical Company, Marietta, Ohio. 150,000 yds.
- Bakelite Company, near Marietta. 80,000 yds.
- Graded railroad line, plant site, and stripped gravel pit for Central States Gravel Co., Chillicothe. 30,000 yds.
- Graded U.S. Hwy. 50, 10 miles east of Chillicothe. 80,000 yds.

Converted for scraper work, 3 of Replogle's Tournapulls and 2 tractor-drawn Carryalls moved 40,000 yards to eliminate sharp curves and build bridge approaches on Ohio Route 3 near Loudonville. On 1800 ft. cycles, each 14-yd. Tournapull delivered 10 loads of sandstone and dirt per 50-min. hour. Total output per Tournapull was 2.7 times that of each crawler-drawn 15-yd. pan.



CONVEY

425 T.P.H. with a B-G model 374

or 200 T.P.H. with

BARBER-GREENE model 363

or 100 T.P.H. with a B-G model 362

see your B-G distributor or write

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• BRIDGES
• PIPE PUSHING
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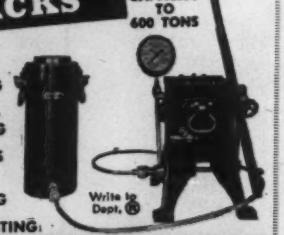


Write to Dept. E

RICHARD DUDGEON INC.

789 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

(Continued from page 74)

b.conc. surf. course, Type I; 495 ft. bridge of concrete, steel approach spans on alternate precast reinforced or prestressed concrete piling, double leaf bascule spans and control house, concrete storm sewers, concrete curb and gutter 0.5 mi. State Rd. A-1-A, F.A.P.U. 039-1 (1), Job 8603-201, Broward Co. Bids Dec. 21, awarded Mar. 11. CD 12/29, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee, **Cleary Bros. Constr. Co.**, Box 6815, West Palm Beach, Fla., CA, $1,181,845, Miami rock base with hot binder course and b. conc. surf. course, Type I; 402 ft. bridge over Intracoastal Waterway of concrete, steel approach spans on alternate precast reinforced or prestressed concrete piling; double-leaf bascule span and control house, small drainage structures, etc. 3.363 mi. State Rd. No. 5, F.A.P. F-003-3 (22), Job 9304-202, Palm Beach Co. Bids Dec. 21, awarded Mar. 11. CD 12/29, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, **S. & W. Constr. Co.**, Shrine Bldg., Memphis, Tenn., CA $1,279,783, c. conc. and bit. materials paving, const. overhead over Yale Yards of St. Louis-San Francisco Ry. in Memphis on Airways Blvd., 2.02 mi. Proj. No. U-069-1-(1), Shelby Co. Bids Dec 3. CD 12/7, under LB

BUILDINGS

LOW BIDS AND CONTRACTS

† **Virginia Eng. Co.**, 29 St. and James River, Newport News, Va., LB $944,000. four 3 story concrete, masonry BACHELOR OFFICERS QUARTERS, CENTRAL HEATING PLANT, ENG-44-110-55-16. FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk 1, Va. Bids Mar. 10. CD 3/2.

▲ **Dalon Contg. Co.**, 1134 Dalon Dr., Atlanta, Ga., CA $1,000,000, building to house new MILL and 2 WAREHOUSES, ATLANTA, GA. Atlantic Steel Co., 3165 Mecaslin St. N. W., Atlanta, Ga. Rust Eng. Co., Exchange Bldg., Birmingham, Ala., engr. CD 1/28.

Caldwell & McCann, Box 477, Baton Rouge, La. CA $828,176. masonry, steel, concrete frame HIGH SCHOOL, BOGALUSA, LA. City, Northside Elementary School, Bogalusa, La. Bids Mar. 3. CD 1/5.

Ryan Constr. Co., 800 E. Michigan St., Evansville, Ind. CA $714,400. enlarging POWER PLANT, present water intake, 12,650 kw generator, 125,000 lb. steam generator, 12,600 sq. ft. turbine generator, HENDERSON, KY. City, Henderson, Ky. Bids Feb. 28, awarded Mar. 8. CD 3/4, under LB.

MIDDLE WEST

BIDS ASKED—BUILDINGS

O., **Forestville**—SCHOOL—BA 3/31—Bd. Educ., Anderson Twp., Beechmont Ave., Forestville School addns. $500,000. Plans deposit $25. Frankenberger, Junker & Lensky, 2910 Woodburn Ave., Cincinnati, engrs.-archts. CD 2/17/54.

▲ Wis., **Winnebago**—FOOD SERVICE, etc.—BA 4/1—State Dpt. P. Welfare, Madison food service and laundry, State Hospital. $1,400,000. Extended date. CD 2/24.

▲ Ill., **Chicago**—APARTMENTS—BA 4/5—New York Life Insurance Co., 51 Madison Ave., New York, N. Y. two 640-unit apartments, in area cleared by Chicago Land Clearance Comn., second group of apartments. $6,000,000. Skidmore, Owings & Merrill, 100 W. Monroe St., Zone 3, archts. CD 8/18/49.

▲ O., **Oxford**—HIGH SCHOOL—BA 4/21—Bd. Educ., Talawanda Dist., Oxford, high school. $1,000,000.

SOON LETS CONTRACT—BUILDINGS

▲ Ill., **Waukegan**—HOSPITAL, etc.—Victory Memorial Hospital, 1324 N. Sheridan Rd., soon lets contract hospital addn., boiler house and laundry, obstetrics bldg. $1,500,000. Ekstrand, Schad & West, 1334 Grand Ave., archts. CD 11/23/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Shaw & Estes**, 1407 S. Akard St., Dallas, Tex., LB $930,836, est. $991,647, bio-acoustic facilities, Area B, Wright-Patterson Air Force Base, ENG-15-029-55-49, DAYTON, O. U. S. Eng., P.O. Box 59, Louisville, Ky. Bids Mar. 10. CD 2/8.

James McHugh Constr. Co., 6449 S. S. Park St., Chicago, Ill., LB $663,190, est. $663,000, grit and grease removal facilities at primary sewage treatment plant; **Candler-Rusche, Inc.**, 8145 Medina St., Detroit, Mich., LB $231,400, est. $274,000, steel sheet piling bulkhead at sewage treatment plant, approx. 1,350 ft., TOLEDO, O. City, Safety Bldg., Toledo, O. Bids Mar. 1. CD 1/17.

▲ ILLINOIS—State Div. Hys., Centennial Bldg., Springfield,
E. A. Meyer Constr. Co., 1539 Morrow Ave., North Chicago, Ill., CA, $597,569, c. conc. addnl. 2-lane pavement 5.24 mi. U. S. 66, Grundy Co.;
S. G. Groves & Sons Co., 1104 W. Reynolds St., Springfield, Ill., CA, $1,568,365, c. conc. 3.51 mi. U. S. 36, Macon Co. Bids Feb. 25, awarded Mar. 11. CD 3/2, under LB.

▲ ILLINOIS—State Div. Hys., Centennial Bldg., Springfield,
Standard Paving Co., 3098 W. Washington St., Chicago 6, Ill., CA, $691,536, c. conc. 6.08 mi. 2 addnl. lane pavement on U. S. 66; CA, $722,729, c. conc. addnl. 2-lane pavement 5.4 mi. U. S. 66; CA $762,712, c. conc. addnl. 2-lane pavement 5.69 mi. U. S. 66, all foregoing in Livingston Co. Bids Jan. 28, awarded Mar. 11. Grand total $2,176,977. CD 2/1, under LB.

ILLINOIS—State Div. Hys., Centennial Bldg., Springfield,
rejected bids Feb. 25, c. conc. base course 2.09 mi. c. conc. base course wid'n. 9.61 mi. Ill. 1, Crawford Co. LB $613,912. CD 3/2, under LB.

Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB, $553,551, paving West Birchwood Ave. Proj., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Mar. 8. CD 3/2.

Geo. H. Hartong, Inc., 340 Sherwood Dr., La Grange, Ill., LB $571,750, paving, widening 55 St. from Lagrange Rd. to County Line Road, south of Lagrange, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Mar. 8. CD 3/2.

▲ **Thomas McQueen**, 1313 Circle St., Forest Park, Ill. LB, $2,199,803, 52nd Ave. Bridge over Yard of C. B. and Q. R. R., CICERO, ILL. Town, Town Hall, Cicero, Ill. Bids Mar. 5

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland 14, O., CA $1,349,745, general contract, 2 story masonry COUNTY OFFICE, CLEVELAND, O. Comrs. Cuyahoga Co., Court House, Cleveland, O. Bids Mar. 7, awarded Mar. 11 CD 3/10, under LB.

▲ **Eastland Ranch Homes, Inc.**, c/o J. G. Werkowitz, Calahan Bldg., Dayton O. Owner Builds. $3,500,000. 261 HOMES, 62-acre tract, Mad River Twp., and 28 homes in suburban Trotwood, DAYTON, O.

K-D Builders, 6089 State Rd., Parma, O. Owner Builds. $750,000. 50 ranch type DWELLINGS, Bebee Court off Rte. 20, ELYRIA, O. CD 3/4.

▲ **K-D Builders**, 6089 State Rd., Parma, O. Owner Builds. $15,000,000. 650 ranch and split-level HOMES, Rte. 303 and Boston Mills Rd., HUDSON, O. CD 3/4.

▲ **Middletown Ranch Homes, Inc.**, c/o Paul Browning and George R. Malowney Assocs., Inc., 1100 Mitchell Blvd., Springfield, O. Owner Builds. $4,000,000. 275 ranch type HOMES, 100-acre tract east of MIDDLETOWN, O.

▲ **K-D Builders**, 6089 State Rd., Parma, O. Owner Builds. $2,500,000. 128 ranch type HOMES, York and Pleasant Valley Rds., PARMA, O. CD 3/4.

Nnnen & Busse, 730 E. Northwest Hy., Mount Prospect, Ill., Own Forces, $550,000, 30 HOMES, MOUNT PROSPECT, ILL.

▲ **Contractors & Builders Inc.**, 228 N. La Salle St., Chicago, Zone 1, Ill., Own Forces, $1,500,000. 18 Town HOUSES, 90 units, Niles Center Rd., Carol and Crane Aves., SKOKIE, ILL. A. J Bianco, 5501 W. Irving Park Blvd., Chicago, Ill., archt.

▲ **Howard Spurgeon**, Forest Ave., Washington, Ill., Own Forces, $5,000,000, 450 HOME HOUSING, and street paving, WASHINGTON, ILL.

▲ **Wickes Boiler Co.**, 515 N. Washington St., Saginaw, Mich. CA $1,086,516. 3 BOILERS, Moores Park Station, LANSING, MICH. City, Otto E. Eckert, Bd. Light Comrs., 116 W. Ottawa St., Lansing, Mich. CD 1/28.

▲ **Nelson Realty Co.**, Woodrow W. Nelson, 16157 Hamilton St., Detroit 3, Mich. Owner Builds. $3,000,000-$5,000,000. Roseland Woods subdivision 187 HOMES, Evergreen and 8½ Mile Rd., SOUTHFIELD, MICH.

▲ **Michigan Lumber Co.**, Charles Goldberg, pres., 6450 E. Seven Mile Rd., Dtroit, Mich, Owner Builds. $12,000,000. 1,200 HOUSES, 400 acre site Clinton River Rd., east of Van Dyke, UTICA, MICH.

▲ **Lincoln Constr. Co.**, 1418 Cadillac Tower, Detroit, Mich. Owner Builds. $2,100,000. Penrose Park Subdivision, 200 brick HOUSES, Palmer and Wayne Rds., WAYNE, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **Tex.**, Ellington Air Force Base—NATIONAL GUARD FACILITIES—BA 4/1—U. S. Eng., Box 1229, Galveston, Air National Guard Facilities, 63,224 sq. ft. steel frame hangar; 2 story, 16,432 sq. ft. hangar lean-to; paint shop, motor repair shop, motor pool parking, concrete paving, outside utility lines, etc., ENG-41-243-55-37. $500,000-$1,000,000. CD 3/7.

† **Tex., San Antonio**—HANGAR—BA 4/15—U. S. Eng., Box 1229, Galveston, maintenance hangar and communications-operations bldg., appurtenances, utilities, etc., Brooks Air Force Base, ENG-41-243-55-50. $500,000-$1,250,000. CD 3/11.

SOON LETS CONTRACT—BUILDINGS

▲ **Tex.**, Galveston—HOTEL—The Beach Corp., c/o Miramir Hotel, Seawall Blvd., soon lets contract 100-room hotel. $1,000,000. Thomas M. Price, 819 Broadway, archt. Rivoire & Poole, 2506 Richton St., Houston, and R. L. Reid, 2506 Richton St., Houston, engrs. CD 3/10.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

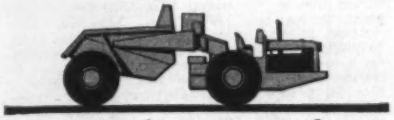
▲ OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,
Amis Constr. Co., 1647 Exchange Ave., Oklahoma City, Okla., LB $171,839, est. $173,625, stab. aggregate base with double bit. surf. 6.789 mi. Hy. 20 from Jay to the Arkansas State Line, Delaware Co.; LB $99,605, est. $103,860, stab. aggregate base with double bit. surf. 4.223 mi. Hy. 20 from Jay to the Arkansas State Line, Delaware Co.;

(Continued on page 78)

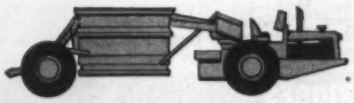
HOW one contractor solved the scraper size problem

If you've had trouble deciding what size self-propelled scrapers to buy, perhaps the experience of Robertson, Bolen & Fowler, Inc., Buchanan, Virginia, can be of help.

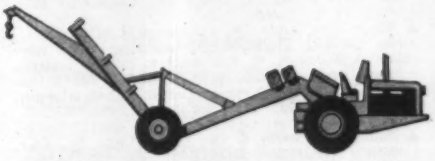
This well-known firm studied all available machines, then purchased four 7-yd. D Tournapulls and later two 16-yd. C Tournapulls. The "C's" they use in any cut or on any job where a large volume of dirt has to be moved. The "D's" work side-by-side with the "C's" on the biggest jobs... with their 28 mph speed, the 7-yd. size has proved ample for profitable use in same pusher fleets. Often, one or more of the "D's" works alone on a small-yardage contract, or as a finishing or cleanup tool. On these jobs, they usually self-load the dirt. When considerable rock is encountered, contractors use the "D" prime-movers with 9-ton rear-dump trailing units. For other work, they could also interchange their "C" scraper for 18-ton rear-dumps, as shown here:



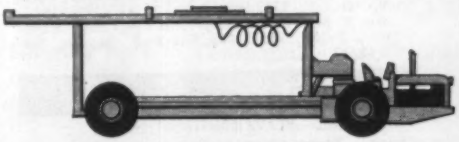
...or the scrapers and rear-dumps for:



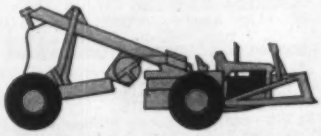
18-yd. bottom-dump



10 or 20-ton crane



10 or 20-ton flatbed



or logging arch-&-winch

Each of these 6 trailing units is available to them (and to you) for less than 25% of the cost of the original prime-mover and trailing unit combination. Each gives you a low-cost specialized tool which will do certain types of work at a far lower cost than is possible with general-purpose equipment. Each reduces your equipment inventory and assures you of steady and profitable earnings.

4 machines, 6,915 yds. daily

Take scraper production as an example of Tournapull work-ability. Forrest Cook, Superintendent for Robertson, Bolen & Fowler, figures each of their "C" scrapers hauls as much as 180 loads per 10-hour day on typical 1400′ cycles. On the job pictured—leveling 250,000 yards of clay for the General Electric plant at Salem, Va.—each pusher-loaded "C" carried 13 pay yards per load. Daily output for the 2 "C's" combined averaged 4,680 pay yards.

The smaller, faster-loading "D's", Mr. Cook points out, hauled as much as 214 loads each per 10-hour day, same job, same pusher, same 1400′ cycle. Based on an estimated 5.2 pay yards per load, output for the 2 "D's" combined was 2,235 pay yards daily.

Supt. likes low maintenance

Adds Supt. Cook, "Besides high production, I like the low maintenance of Tournapulls. And they sure can get in and out of wet spots nicely."

Operator likes ease of control

Says Bill King, "I have operated all makes of rubber-tired equipment. I like LeTourneau-Westinghouse rigs the best for ease in operating! They don't make me nearly so tired at the end of the day."

Let us show you what Tournapull output, low maintenance, easy operation and great versatility can mean on your work. Call us for a cost analysis. Then, if you want to prove the figures, ask for a demonstration. We'll have a Tournapull on your job in a few days.

20 mph job-to-job

Both C and D Tournapulls are narrow enough and light enough to make self-powered job-to-job moves. Top speeds in traffic: 28 to 30 mph. Typical Robertson, Bolen & Fowler trip: 40 miles through heavy traffic in just over 2 hours.

Tires last over 3 years

Robertson, Bolen & Fowler's 3 oldest "D's" each have logged 7,500 hours in 3 years... original tires have just been recapped. Other 3 Tournapulls, bought in 1953 and 1954, are running on original treads.

IMPORTANT HP CHANGES
on present production models
"D" raised from 122 to 138 hp
"C" raised from 186 to 208 hp

Tournapull—Trademark Reg. U.S. Pat. Off. PDP-715-8-b

LeTourneau-Westinghouse Company

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A Subsidiary of Westinghouse Air Brake Company

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Structural Steel
BRIDGES and BUILDINGS

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Subsidiary—Barium Steel Corporation

Mayo's NEW, SAFE

AUTOMATIC COUPLER FOR MINE CARS

Mayo's new, cast steel coupler for narrow-gauge mine cars hooks on in seconds automatically from any position. Eliminates dangerous hand-coupling, saves time. Easily bolted to existing cars. Costs about half of comparable equipment.

MAYO
Tunnel and Mine Equipment
Lancaster, Pa.

(Continued from page 76)

Clark Constr. Co., Woodward, Okla., LB **$94,964**, est. $123,721. grade, drain 7.29 mi. Hy. 8, north and east of Carmen, Alfalfa Co.;
H. G. Cozad, Sulphur, Okla., LB **$317,117**, est. $390,645, grade, drainage and bridges 5.291 mi. on relocation U. S. 77, north of Marietta, Love Co.;
Elliott Bros., Perry, Okla., LB **$79,290**, est. $76,488. asph. stab. base with single bit. surf. 2.471 mi. Hy. 34 at Camargo, Dewey Co.;
Hunter Constr. Co., Ada, Okla., LB **$132,872**, est. $136,827, stab. aggregate base, b. conc. surf. 0.51 mi. Hy. 51, east of Stillwater, Payne Co.;
McConnell Constr. Co., 5020 N.W. 16 St., Oklahoma City 7, Okla., LB **$179,297**, est. $172,234, asph. stab. base with single bit. surf. 7.836 mi. Hy. 5, at Frederick, Tillman Co.;
Pool Constr. Co., Shawnee, Okla., LB **$95,499**, est. $114,523, stab. aggregate base with double bit. surf. 4.508 mi. Hy. 68, north of Holdenville, Hughes Co.; LB **$104,963**, est. $129,933, stab. aggregate base with double bit. surf. 5.145 mi. Hy. 68, north of Holdenville, Hughes Co.;
Smith Bros., Noble, Okla., LB **$207,048**, est. $197,665, asph. stab. base with single bit. surf. 7.29 mi. Hy. 8, north of Carmen, Alfalfa Co. Bids Mar. 8. CD 2/23.
Lippert Bros., 2800 N. Santa Fe St., Oklahoma City 5, Okla., CA **$579,354**, est. $712,000, 46-room lodge at Quartz Mountain State Park, at Lingert, Kiowa Co., OKLAHOMA. State Planning & Resources Bd., Capitol Bldg., Oklahoma City, Okla. Wright & Selby, Hightower Bldg., Oklahoma City, Okla., archts. Bids Mar. 4, awarded Mar. 9. CD 2/16.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **McKee Realty & Development Co., Inc.**, 8726 St. Charles Rock Rd., Overland 14, Mo. Owner Builds. $1,000,000. 250 addnl. frame RESIDENCES, in Woodson Hills No. 3 subdivision on Edmundson and Woodson Rds. north of Natural Bridge Rd., OVERLAND (ST. LOUIS 14 P.O.), MO.
▲ **Murch-Jarvis Constr. Co.**, 718 Locust St., St. Louis 1, Mo. CA Est. **$1,000,000.** 2 story top addn. containing 80,000 sq. ft. floor space to existing 2 story, bsmnt. brick, rein.-con. SERVICE BLDG., 721 S. 18 St., ST. LOUIS, MO. Union Electric Co. of Missouri, 315 N. 12 Blvd., St. Louis 1, Mo. Bids Mar. 1. CD 2/24.
▲ **Butcher & Sweeney & Co.**, 806½ Taylor St., Fort Worth, Tex., CA **$1,253,643**, est. $1,250,000. CHURCH with sanctuary, chapels, educ. bldg., etc., 1000 Penn St., FORT WORTH, TEX. First Presbyterian Church, c/o Dr. R. F. Jones, pastor, 507 Taylor St., Fort Worth, Tex. Bids Mar. 4, awarded Mar. 8. CD 3/9, under LB.
Marvin Henry Building Co., Inc., 4208 Ella Blvd., Houston, Tex., CA **$732,860**, Group 8, 41 DWELLINGS; Group 9, 30 DWELLINGS, PASADENA, TEX. Marvin Henry, Builder, Inc., 4208 Ella Blvd., Houston, Tex. CD 11/17.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† **Ariz., Tucson**—CANTONMENT AREA—BA 3/30—U. S Eng., 751 S. Figueroa St., Los Angeles, Calif. cantonment area at Air Force Station, M-92, ENG-40-353-55-**112.** $1,000,000. CD 8/27.

BIDS ASKED—BUILDINGS

▲ **Calif., Los Angeles**—HOSPITAL—BA 3/30—City, City Hall, 2 story, rein.-con. central receiving hospital $1,000,000. H. C. Chambers & Lester Hibbard, 124 W. 4 St., archts. CD 11/6/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OREGON**—State Hy. Comn., Highway Bldg., Portland,
K. F. Jacobsen & Co., 1601 N.E Columbia Blvd., Portland, Ore., CA **$148,125**, grading, paving 3.83 mi. Clackamas-Boring county road, Rock Creek-Damascus Sect., FAP S-271 (3), Clackamas Co.;
Vernie Jarl, Gresham, Ore., CA **$95,979**, grading, paving, 2.56 mi., 29 mi. reoiling, Old Oregon Trail Hy. Umatilla Co.;
Max J. Kuney Co., N 120 Ralph St., Spokane, Wash. CA **$740,550**, paving 13.7 mi. Pacific Hy. FAP BFI-161 (24), Lane Co.;
Stevenson Constr. Co., Salem, Ore., CA **$84,309**, grading, paving 1.11 mi. Willamina-Salem Hy., Polk Co.; CA **$136,356**, paving, grading 0.3 mi., remove concrete bridge, Pacific Hy. West. FAP F-73 (13), Yamhill Co. Grand total $1,205,319. Bids Mar. 2.
▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Winston Brothers, 1532 S. California Ave., Monrovia, Calif., CA **$2,210,076** c. conc. on cement tr. subgrade, paving, plant mix. surf. on selected material 5.2 mi. 1 bridge, 2 undercrossings, between Citrus Ave. and Ganesta Blvd., Los Angeles Co. Bids Feb. 3, awarded Feb. 25. CD 2/16 under LB.
▲† **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif., LB **$1,508,227**, constr. Arcadia Wash Channel, Huntington Pl. to Rio Hondo Channel, Arcadia, Los Angeles Co. CIVENG-04-353-55-28, CALIFORNIA U. S. Eng., 751 Figueroa St., Los Angeles, Calif. Bids Mar. 8. CD 2/8.
▲ **H. K. Ferguson Co., Inc.**, 411 W. 5 St., Los Angeles Calif., CA **$1,600,854**, transit shed and retaining wall at Berths 20 and 21 Pier "C" Long Beach Middle Harbor, LONG BEACH, CALIF. Long Beach Harbor Dpt., 13331 El Embarkadero, Long Beach, Calif. Bids Mar. 3. CD 3/10, under LB.
▲ **John A. Artukovich Sons, Inc., Artukovich Bros. Investment Corp.**, 16200 S. Atlantic Blvd., Paramount, Calif., CA **$2,916,231**, est. $2,000,000. 28,400 ft. 79-in. welded steel pipe line, South Gate, LOS ANGELES, CALIF. Metropolitan District of Southern Calif., 306 W. 3 St., Los Angeles, Calif. Bids Mar. 3. CD 3/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Sound Constr. & Eng. Co.**, 1300 Aloha St., Seattle, Wash., CA **$604,711**, BARRACKS, ADMINISTRATION BLDGS., Inv. 55-21, CAMP HANFORD, WASH. U.S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 17. CD 2/24, under LB.
E. R. Haynes, W 2028 Santo St., Spokane, Wash., CA **$520,460**, COURT HOUSE, COLFAX, WASH. Whitman Co., Court House, Colfax, Wash. Bids Jan. 17. CD 1/21, under LB.
▲ **Jacmar Cones**, Box 8155, Long Beach, Calif., CA **$1,042,505**, 125 frame, stucco DWELLINGS, Bowberry, Greenlop Sts., and Maybank Ave., LAKEWOOD, CALIF. Malinda Constr. Co, Palamino Constr. Co., Montepar Constr. Co., Box 8155, Long Beach, Calif. Paul J. Duncan, 13310 Moorpark St., Sherman Oaks, Calif., archt.
▲ **La Mirada Wood Bldg. Co.**, 1166 E. 58 St., Los Angeles, Calif. Owner Builds, **$1,060,800**, 104 frame stucco DWELLINGS, Ocaso Ave., La Barca Dr. and Hayford St., LA MIRADA, CALIF. Wm. Bray, 962 N. La Cienega St., Los Angeles, Calif., archt.
▲ **Given & Benjamin**, 7700 Sunset Blvd., Los Angeles, Calif., Owner Builds, **$1,932,600**, 199 DWELLINGS Stamey Rd., Hornet, Bluefield and Mystic Sts., WHITTIER, CALIF. Hudson & Brokaw, 2824 W. Olympia Blvd., Los Angeles, Calif., archts.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **ONTARIO**—BA 5/10—Ontario Hydro-Electric Power Comn., 620 University Ave., Toronto, Canadian half of St. Lawrence Power Project Powerhouse, concrete 1,500 ft. long, 170 ft. high, 190 ft. wide, Cornwall. Plans deposit $50 for first set, $25 for each addnl. set; adv. ENR 3/24.

BIDS ASKED—BUILDINGS

▲ **Que., Montreal** — HOUSING DEVELOPMENT — Bids Asked—Scott & Percy Ltd., 1980 Sherbrook St. W., 200-home housing development, near Redford Park, $3,000,000. CD 3/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **International Constr. Ltd.**, 61 Ave., L'Abord a Plouffe, Montreal, Que., Owner Builds, **$2,000,000.** 200-unit HOUSING DEVELOPMENT, L'Abord a Plouffe, suburban area MONTREAL, QUE.

PUERTO RICO

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hector Pinere**, San Juan, Puerto Rico, CA **$1,154,890.** ADMINISTRATION BLDG., WAREHOUSE, SHOPS, GARAGE for maintenance center, near San Juan, Puerto Rico, Govt. of Puerto Rico, San Juan, Puerto Rico.

WATER SUPPLY

Proposed Projects

▲† **D. C., Wash.**—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., Third High Reservoir, Washington Aqueduct. **$1,000,000-$3,000,000.**
▲ **Tex., San Antonio**—City Water Bd., 106 W. Market St., water pumping station for Olmos Basin area, **$2,225,700**; (1st priority jobs of water main extens.) in Dellview, Inspiration Hills, Woodlawn Hills, Highland Hills, Wilshire Area and north of Olmos Basin, **$3,892,200**; (2nd priority jobs of water main extens.) in St. Marys University area, Gen. McMullen Dr., north of Commerce St., south of Woodlawn, in center of city west of Freeway, along Austin Hy., Terrell Heights, and in area north of Delwood, **$2,132,700**; (3rd priority), laying huge water mains, reconditioning existing ones in portions of city where trouble now exists and there is dire need for new lines, **$2,022,000**; complete renovation and remodeling Market St. Water Pumping Plant, **$500,000**; elevated steel water storage tank in Northridge, **$220,800**; elevated steel water storage tank, Austin Hy., **$264,700**; water pumping station imprvs., at Bandera-Loma Linda, **$69,800**; water pumping imprvs., Klaus-Hillcrest-Sutton-Barbet, **$45,410**; water pumping station for Waltzen area, **$46,800**; water supply pump station at 34th St. **$710,800**; new water supply pump station, Artesia Area. **$717,400**; water supply pump station, Mission Area, **$623,500.** CD 8/20/52.

SEWERS, WASTE DISPOSAL

▲ **Pa., Phila.**—Dpt. Procurement, City Hall Annex, refuse incinerator, Fox St. and Abbottsford Ave. **$1,800,000.** Day & Zimmerman, 1700 Sansom St., consult. engrs.

BRIDGES

▲ **VIRGINIA**—Commonwealth of Va., State Hy. Dpt., Highway Bldg., Broad St., Richmond,
Prince George and Charles City Counties—bridge over James River near Hopewell, Va. on State Rte. 36 which connects State Rte. 10 in Prince George Co. and State Rte. 5 in Charles City Co. **$6,000,000.**

(Continued on page 80)

Hauling 1½ miles on narrow, slippery roads. Tournapulls must maneuver around draglines, tractors, and other equipment. Big 4-wheel air brakes and positive power steer permit safe use of high haul speeds. Tournapulls are taking fill from underpass excavation to overpass fill while draglines muck out another section.

D. W. Winkelman speeds $8,973,000 section of Ohio Turnpike

Doubles Tournapull fleet to lick long hauls, hills, rain, and traffic

With 3,340,000 cubic yards to move on a 10-mile section of the Ohio Turnpike near Pennsylvania, D. W. Winkelman Co. Inc., Syracuse, needed equipment that could work well under difficult conditions.

These conditions included tough-loading material — mostly shale, clay, and gumbo — plus lots of rain.

Puts 12 "C's" and 3 fast rubber-tired tractors to work

To complete the $8,973,238 job in the shortest possible time, Winkelman drove in a fleet of 6 C Tournapulls from the New York Turnpike, doubled this with 6 new "C's" to make it a Tournapull dozen. They also brought 3 of their rubber-tired Tournatractors to the job site near Youngstown. These were used to speed push-loading, dozing, and scattered tractor jobs.

The Tournapulls usually were pushed by a 175 hp crawler. Each side-boarded "C" regularly loaded 13 pay yards of sticky, wet clay in 150 to 200 ft. In spite of delays caused by the rain-soaked footing . . . plus delays for highway traffic and slowdowns for other equipment crowding the narrow winding haul load . . . cycles of 16,500 feet took only 21½ minutes.

"C's" do the tough jobs

This outstanding performance was nothing new to the Winkelman organization. As is true in construction work all over the country, they always have assigned Tournapulls to move earth where conditions were toughest. Their records show Tournapulls outperform others on the following assignments:

Slippery mud — Tournapull's automatic power-transfer differential shifts power to wheel on firmer footing — allows the units to "walk" out of the mud.

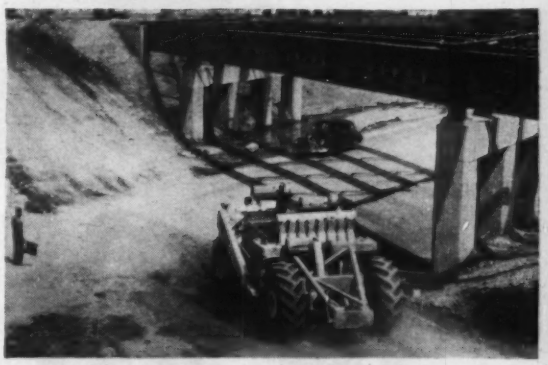
Long haul distances — The "C's", with a top speed of 30 mph, continually post good records on both short and long hauls. Big, low-pressure tires roll over paved roads or cross-country with equal ease.

Close quarters — Fingertip controls and 15′ turn radius make "C's" a "natural" for work in tight spots where competitive self-powered scrapers often cannot even go.

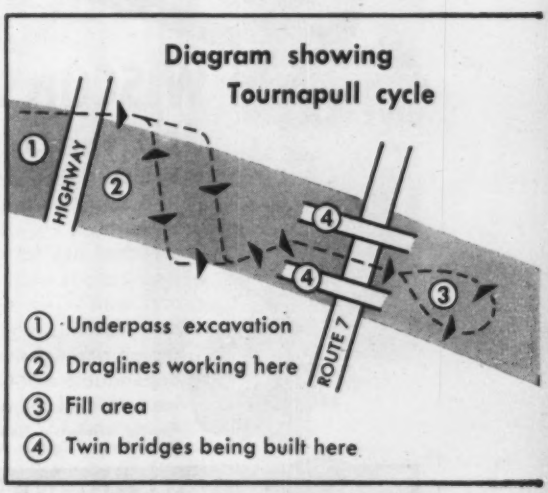
Emergency service — Here's one typical example! One of the big cranes on this job was slipping in soft mud. "C's" carried in several loads of dry earth . . . built up a suitable working base for the crane . . . returned to production earth-moving in a few minutes.

Ask for more information

Compare all the facts. We believe you'll quickly see why LeTourneau-Westinghouse owners have the best insurance for profits when competition gets tough.



Another part of haul takes Tournapulls across busy Route 7. Units travel here down 200′ of 7% grade, across pavement, then up 7% grade. Haul speeds averaged 10 mph for entire 3-mile cycle, despite numerous adverse grades and slowdown to cross two highways.



Tournapull—Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark PT-725-H-b

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

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THE *Finest* TRACING CLOTH

Imperial is known in drafting rooms all over the world as the traditional quality tracing cloth.

With the background of decades of experience, its makers have pioneered in modern improvements to maintain Imperial as the finest tracing cloth made.

Wherever Engine POWER is Needed...

Single cyl. 3 to 9 H.P.

2-cylinder, 7 to 15 hp.

V-type 4-cyl. 15 to 36 H.P.

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Fit the Job and the Machine

Because Wisconsin Air-Cooled Engines are supplied in a complete power range, from 3 to 36 H.P., in 4-cycle single cylinder, 2- and 4-cylinder types, there is an ideal size to fit all types of machines and power applications within this range, without wasted power and with maximum power service benefits. Heavy-duty construction, combined with extremely compact design and light weight are added advantages—and dependable AIR-COOLING permits trouble-free service under all climatic conditions.

Specify Wisconsin Heavy-Duty Air-Cooled Engines for the utmost in power satisfaction. Write for descriptive data.

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WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A 7111-¼-R-5

(Continued from page 78)

STREETS AND ROADS

▲ **Calif., Martinez**—Contra Costa Co., Hall of Records, Martinez, imprv. 5 mi. San Pablo Dam Road, $1,250,000. Tudor Eng. Co., 74 New Montgomery St., San Francisco, consult. engr. CD 6/10/52.

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Zone 5,

Kanawha Co.—exten. MacCorkle Ave. from Patrick Street Bridge to C & O R.R. Station southside of Kanawha River and modernization of interchanges to bridge on north side of river Charleston, $7,000,000;

exten. Route 25 (W. Va.) through Dunbar for 2.5 mi. from Lock Six to 12 St., on north side of New York Central R.R. Tracks, Dunbar, $1,500,000. Geo. W. McAlpin, c/o owner, staff engr. Howard, Needles, Tammen & Bergendoff, 804-A Greenbrier St., Charleston, consult. engrs.

EARTHWORK, WATERWAYS

▲† **Maryland**—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., channel and levee constr. Anacostia River, Bladensburg. $1,000,000-$3,000,000. CD 6/9/44.

AIRPORTS

▲† **Tex., San Antonio**—RUNWAYS—U. S. Eng., P. O. Box 1229, Galveston, plans by Mitchell & Hunt, archts.-engrs., 207 Transit Tower, constr. runway, Brooks Air Force Base. Over $5,000,000. CD 10/19.

▲ **Va., Richmond**—HANGAR, etc.—City, City Hall, rebuilding airplane hangar, $1,000,000, CD 10/7/43; runways exten. $1,000,000, both at Byrd Airport. CD 3/10/53.

LATIN AMERICA

▲ **Brazil, Cubatao**—Companhia Brazilera de Estireno (Brazilian Styrene Co.) subsidiary Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa., and Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17, O., and Brazilian Interests, plans styrene plant. $3,000,000. Koppers Eng. & Constr. Co., Koppers Bldg., Pittsburgh 19, Pa., consult. engrs.

AMERICANS ABROAD

▲ **Turkey** — DEFENSE FACILITIES — Ministry of Defense, Govt. of Turkey, Ankara, plans defense facilities. Adrian Wilson & Assocs., 816 W. 5 St., Los Angeles, Calif., Gugler, Kimball & Husted, 101 Park Ave., New York, N. Y., Ammann & Whitney, 76 9th Ave., New York, N. Y., U. S. A., engineer-architects will design and supervise construction under NATO.

PUBLIC BUILDINGS

▲† **Ariz., Fort Huachuca**—HOUSING—U. S. Eng., 74 New Montgomery St., San Francisco, Calif., plans by Blanton & Cole, Tucson, Ariz., housing development $4,000,000.

▲ **Calif., Concord**—SCHOOLS—Mount Diablo Unified School District, Concord, voted $4,500,000 bonds schools. CD 2/2.

▲ **Calif., Ontario**—COLLEGE—Chaffey School Dist., 4 and Euclid Sts., Ontario, $3,600,000 bond election May 20, expanding Chaffey College.

▲ **Calif., Puente**—SCHOOLS—Hudson School District, 15839 E. Rowland St., voted $1,000,000 bonds, schools. CD 3/3.

▲ **Calif., Puente**—SCHOOLS—Puente High School District, Puente, voted $1,360,000 bonds, school imprvt. and construction.

▲ **Del., Newark**—ENGINEERING SCHOOL—University of Delaware, Newark, engineering school, $1,350,000.

▲ **Idaho, Twin Falls**—SCHOOLS—School District, Twin Falls, 2 elementary schools and high school addns. $1,163,000.

▲ **Ky., Bowling Green**—DORMITORIES—Western State Teachers College, Bowling Green, 2 dormitories, $1,200,000. CD 2/24.

▲ **Mass., Northfield**—SCHOOL—Towns of Northfield, Bernardston, Warwick, c/o F. Sumner, Turner, supt. Schools, Center School, Northfield, plans by The Architects Collaborative, 96 Mt. Auburn St., Cambridge, Regional High School, Rte. 10, Bolton Farm, $1,000,000.

▲† **N. H., Hanover**—LABORATORY—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., arctic laboratory, vicinity Dartmouth College. $1,000,000.

▲ **N. J., Bayville**—SCHOOL—Regional Bd. of Educ., c/o F. W. Mease, Toms River, referendum March 24 to vote on project, Ocean County Central Regional High School, Pinewald Golf Course, Berkeley Twp., $1,480,000. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 12/22.

▲ **N. Y., Brooklyn**—RECEPTION and INFIRMARY—Dpt. P. Wks. The Governor Alfred E. Smith State Office Bldg., Albany, reception and infirmary bldg. for 1,000-patients, Brooklyn State Hospital for Dpt. Mental Hygiene. $8,000,000.

▲ **N. Y., Buffalo**—BUILDINGS MODERNIZATION—Dpt. P. Wks., The Governor Alfred E. Smith State Office

(Continued on page 82)

In a variety of corrosive services

BYERS WROUGHT IRON

serves longer at lower cost per year

The true cost picture isn't given by construction costs alone. It must include *maintenance* costs also . . . and when these are included, the most durable materials have proved themselves as the most economical.

You'll find Byers Wrought Iron Pipe and plate the best material to use when you are building for permanence. The illustrations show a few of the many applications where it is serving successfully for others . . . and where it can serve and save for you. The use of wrought iron *adds only a trifle to the overall cost* of a project, and this small investment is returned many times over in extra service.

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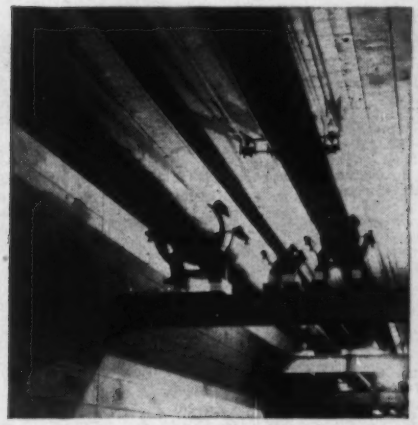
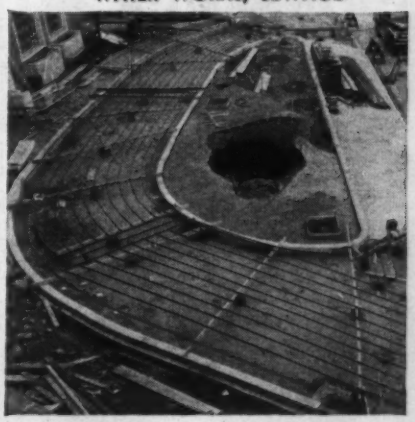


HEATING LINES

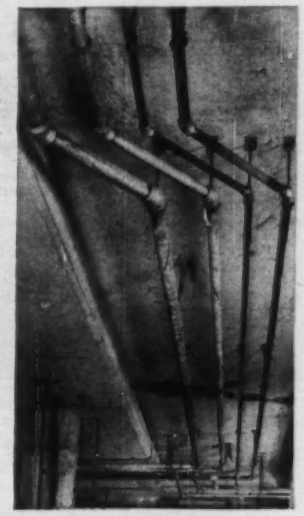
UNDERGROUND LINES

ICE RINKS

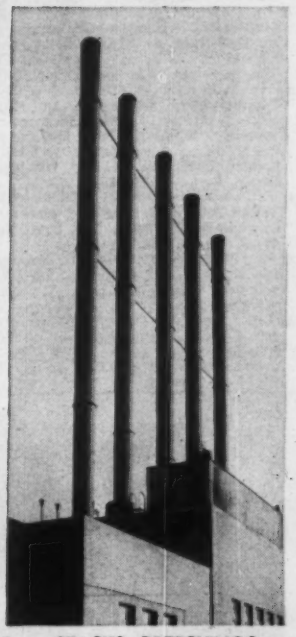
WATER WORKS, SEWAGE



SNOW MELTING, RADIANT HEATING



PLUMBING LINES



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WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY STEEL PRODUCTS

(Continued from page 80)

Bldg., Albany, modernization of Bldgs. 6, 7, 38, 39, 40, $1,300,000; alteration and addn. to Bldg. No. 4, to provide for 150-patients, $1,200,000 at Buffalo State Hospital, for Dpt. Mental Hygiene.

▲ **N. Y., Central Islip**—BUILDINGS MODERNIZATION—Dpt. P. Wks., The Governor Alfred E. Smith State Office Bldg., Albany, modernizing Bldgs. No. 50A, 50B, 50C, 50D and 50E of Group G; Bldgs. Nos. 54A, 54B, 54C, 54D and 54E of Group 1, Central Islip State Hospital for Dpt. Mental Hygiene, $1,400,000. CD 11/28/45.

▲ **N. Y., Long Island City**—FIRE COLLEGE, etc.—Dpt. P. Wks., Municipal Bldg., New York, Zone 7, Proj. F-91, Fire College and Training School, area south of Queens Blvd., west of 50 St. for Fire Dpt. $2,300,000.

▲ **N. Y., New York**—HEADQUARTERS and GARAGE—Dpt. P. Wks., Municipal Bldg., Zone 7, Proj. F-12, combination headquarters bldg. and garage, area west of 2nd Ave., east of 5th Ave. and south of 59 St., for Fire Dept. $2,800,000.

▲ **O., Cincinnati**—COUNTY HOME—Bd. Comrs. Hamilton Co., Court House, plans by Hake & Hake, 2400 Gilbert Ave., and Samuel Hannaford & Sons, Dixie Terminal Bldg., Hamilton County Home addns. $3,000,000. CD 11/5.

▲ **O., Reading**—POWER PLANT—City, 2 story bsmnt., brick, rein.-con. power plant. $1,275,000. Willard Pistler, 4 W. 7th St., Cincinnati, consult. engr. Harry Veddern, serv. dir.

▲ **Ore., Portland**—HIGH SCHOOL—Multnomah County School Dist. 1, 631 N.E. Clackamas St., high school, 82nd and Thompson Sts., $1,750,000.

▲ **Pa., Havertown**—SCHOOLS—Haverford Twp. School Dist., Havertown, elementary school, Highland Ave. and Coopertown Rd. $1,000,000; Lynewood and Chestnutwold Schools addns., alterations, $344,000; Chatham Park and Brookline Schools addns., $344,000.

▲† **Pa., Letterkenny**—ORDINANCE DEPOT—U. S. Eng., P.O. Box 1715, Baltimore 3, Md., Letterkenny Ordinance Depot, design and site adaption of standard drawings, fire control and instrument repair shop, special storage, and service facilities. $1,000,000. Buchart Engr. Corp., 611-53 W. Market St., York, consult. engrs. CD 10/25/51.

▲ **Pa., Meadville** — HIGH SCHOOL — Meadville Area School Dist., R. D. Meadville, plans by W. G. Eckles Co., Lawrence Saving & Trust Bldg., New Castle, high school. $2,000,000.

▲ **Pa., Phila.**—HOUSING—Phila. Housing Auth., 42 S. 15 St., plans by Norman N. Rice, 2400 Pine St., Whitehall Housing, Margaret St., etc. $2,600,000. CD 2/20/53.

▲ **Tex., Amarillo** — SCHOOLS — Amarillo Independent School Dist., Amarillo, Junior High School, $1,225,000; Senior High School, $1,450,000; existing Junior High School addn. $350,000; addns. to group of elementary schools, $375,000; Elementary School No. 1, $375,000; Elementary School No. 2, $400,000; Elementary School No. 3, $410,000; Elementary School No. 4, $425,000. CD 12/22/52.

▲† **T. H., Honolulu**—HOUSING—U. S. Eng., 74 New Montgomery St., San Francisco, Calif., plans by Indenco Engineers, 960 98th St., Oakland, Calif., Benedict, Beckler and Kocher, 252 S. Oxford St., Los Angeles, Calif. and Austin & Towill, Honolulu, 1,326-home proj. at Schofield Barracks. $10,000,000.

▲ **B. C., Victoria**—NAVAL STORES DEPOT—Federal Govt., Ottawa, Ont., plans by Birley & Simpson, 1020 Government St., 1 story 200x600 ft. rein.-con. naval stores depot. $1,000,000. CD 1/13/54.

▲ **Ont., Hamilton**—COURT HOUSE, etc.—Wentworth Co., Court House, plans by Prack & Prack, 310 Main St. E., 5 story court house and registry bldg., Prince's Square. $2,500,000. CD 5/13/53.

COMMERCIAL BUILDINGS

▲ **Calif., Palos Verdes**—DWELLINGS—The McCarthy Co., c/o Edward H. Fickett, archt., 5657 Wilshire Blvd., Los Angeles, 400 frame, stucco dwellings subdivision near Palos Verdes Estate, $4,000,000. CD 2/23.

▲ **Calif., West Covina**—DWELLINGS—McDonald Bros. 6060 West Adams St., Los Angeles, plans by Edward H. Fickett, 5657 Wilshire Blcd., Los Angeles. 110 frame, stucco dwellings in Weathermaker Village. $1,000,000.

▲ **Ill., Chicago**—UNIVERSITY—De Paul University, 2235 N. Sheffield Ave., plans by Naess & Murphy, 60 E. Jackson St., Zone 4, 3 university buildings addn., in Loop District. $1,000,000. CD 10/28/53.

▲ **Ill., Norridge**—SHOPPING CENTER—E. A. Juswik & Co., 10 S. La Salle St., Chicago, Zone 3, plans by Barancik & Conte, 919 N. Michigan St., Chicago, Zone 11, shopping center, Irving Park Rd. and Forest Preserve Dr., $5,000,000.

▲ **Ill., Oak Park**—HOSPITAL and HOME ADDN.—West Suburban Hospital, 518 N. Austin Ave., plans by Philip Duke West, 33 E. 1 St., Hinsdale, (1) 7 story, bsmnt., 55-bed hospital addn. and (2) nurses home addn., $1,000,000. CD 9/22/54.

▲ **Ky., Louisville**—SHOPPING CENTER—George A. Young & Joseph Dahlem, 950 Winchester Rd., Lexington, shopping center, 50,000 sq. ft. department store, 2 supermarkets, variety store, 33 smaller stores, filling station, Preston Hy. and Indian Trail. $1,500,000.

▲ **Md., Silver Spring**—HOTEL—Mrs. Esterlene Bell, 7110 Blair Rd., hotel on Blair Mansion site, 7710 Blair Rd. $2,000,000.

▲ **Mass., Brookline** — HOSPITAL — Allerton Hospital, 68 Allerton St., hospital High and Chestnut Sts. $1,000,000.

▲ **Mo., Kirkwood (St. Louis 22 P.O.)**—CHURCH—First Presbyterian Church, Rev. Donald H. Stewart, 100 E. Adams Ave., Zone 22, church, Adams Ave. and Kirkwood Rd. $1,000,000.

▲ **Mo., Ladue (St. Louis 24 P. O.)**—SCHOOL—St. Louis Country Day School, Ashby T. Harper, headmaster, 5600 Country Day Lane, Berkeley, Zone 21, plans by Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, 1 story, brick, steel, rein.-con., campus-type bldgs. for upper and lower schools, academic bldgs. with connection to science and library wings, gymnasium, dining hall on 56 acre tract Warson Rd. north of Ladue Rd. $2,000,000. CD 10/22/51.

▲ **N. J., Atlantic City**—HOSPITAL—Atlantic City Hospital, 26 S. Ohio Ave., plans by Vincent G. Kling, 917 Corinthian Ave., Phila., Pa., hospital (new wing). $2,500,000.

▲ **N. Y., Grand Island**—MOTEL—Llama, Inc., 276 Hinman Ave., Buffalo, 1 and 2 story masonry 80-room motel; 1 story, masonry 10-store unit shopping plaza; 150 ranch homes; 200-car paved parking lot. $2,000,000.

▲ **N. Y., New York**—APARTMENT—136 E. 55 St., Inc., 36 W. 44 St., Zone 18, plans by Richard Roth, 575 Madison Ave., Zone 22, 19 story apartment, 136 E. 55 St. $1,600,000.

▲ **N. Y, New York**—HIGH SCHOOL—St. Nicholas of Tolentine, Fordham Rd. and University Ave., plans by Ferrenz & Taylor, 152 W. 42 St., Zone 36, high school. $1,500,000.

▲ **Pa., Erie**—HOSPITAL—St. Vincents Hospital, 2420 Sassafras St., plans by Johnson, Gray & Assocs., 1017 Commerce Bldg., 2 story, bsmnt., hospital addn., alterations, $1,250,000. A. S. Kuhl, 820 Holland St., consult. engr.

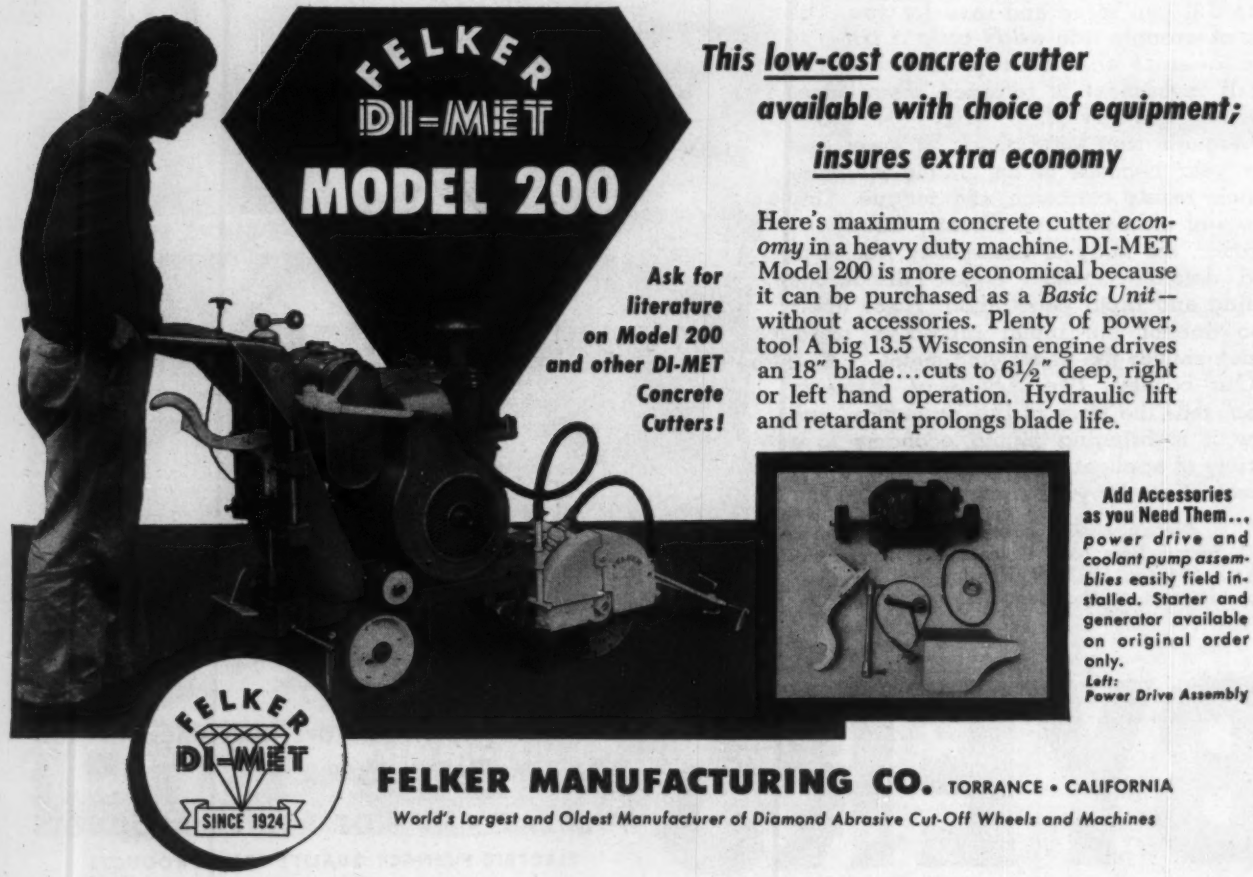
▲ **Pa., Hatfield** — SHOPPING CENTER — Herbert F. Diener & Co., 123 S. Broad St., Phila., shopping center, $5,000,000.

▲ **Pa., Phila.**—HOSPITAL—The Fraternal Order of Police, 4001 Walnut St., hospital. $1,000,000.

▲ **Pa., Upper Darby**—APARTMENTS—Morris A. Kravitz, 225 S. 15 St., Phila. two apartments, Sherbrook Blvd. $2,500,000.

▲ **Tex., Dallas**—HOTEL—Big-Four Realty Co., c/o Z. M. Zalon, 1509-A Cochran St., plans by George W. Edwards, 1509-A Cochran St., addn. of 120-units to Lido Hotel and Courts now under constr. on Hys. 80 and 67, near Loop 12. $1,000,000.

▲ **Tex., Dallas**—SHOPPING CENTER—J. M. Tuttle, Jr., 6 Lake Highland Shopping Village, plans by George Marble, 231 Lake Park Shopping Village, (consult. only) shopping centers, Unit No. 1, $1,000,000; Unit No. 2, $1,000,000; Unit No. 3, $1,000,000, in area Northwest Hy. and Eaton Rd. CD 3/11/54.



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▲ **Tex., Houston**—OFFICES—Ada Oil Co., 609 Hughes St., plans by Donald Barthelme, 3106 Brazos St., (1) 40 story office, $20,000,000 (2) 20 story office, $10,000,000 (3) 20 story office, $10,000,000, in vicinity of Shamrock Hotel.

▲ **Wash., Bellevue**—HOUSES—Lagerguist Bros Inc., & R. E. McCormick & Sons, 2920 Blakeley St., Seattle, 34 houses, $1,500,000.

▲ **B. C., Nelson**—HOSPITAL—Kootenay Lake General Hospital Society, 40 High St., plans by Williams & Fairbanks, Nelson, B. C., and P. D. Smith, Trial, B. C., 120-bed hospital. $1,800,000.

▲ **N. S., Halifax**—SHOPPING CENTER—Maxwell Cummings & Sons, 1390 Sherbrooke St., Montreal, Que. 15 to 20 stores shopping center, 600 car parking area, near Halifax-Dartmouth Bridge. $1,250,000.

▲ **Ont., Toronto**—APARTMENT HOTEL—Ben Seaton, 45 Wembley Rd., plans by E. I. Richmond, 455 Spadina Ave., 14 story, apartment hotel with 5 story garage, 36 Carleton St. $3,000,000.

▲ **Que., Montreal**—SHOPPING CENTER — Cavendish Gardens, Inc., 5305 Sherbrooke St. W., 38-store shopping center in Greenfield Park area of here. Over $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Mobile**—PAPER MILL—International Paper Co., 220 E. 42 St., New York 17, N. Y., paper mill $20,000,000.

▲ **Mich., Petoskey**—PLANT—Penn Dixie Corp., Petoskey, cement plant expansion, incl. 375 ft. long kiln. $4,000,000.

▲ **Mich., Troy**—PLANT—Vickers, Inc., 1400 Oakman Blvd., Detroit, Zone 18, plant, incl. admin. offices, laboratory, 15 Mile Rd. and Crooks Rd. $2,250,000.

▲ **Mo., Robertson**—MACHINE SHOP—McDonnell Aircraft Corp., Lambert-St. Louis Municipal Airport, Robertson, Zone 21, 1 story 30 ft. high machine shop and for mfg. airplane parts on 141 acre site near airport, Graham and Brown Rds., in Berkeley, $3,000,000.

▲ **O., Brooklyn** — WAREHOUSE — American Greetings Corp., 1328 W. 78 St., Cleveland, 400,000 sq. ft. warehouse, 102-acre site at Tiedeman and Memhis Rds. $2,000,000.

▲ **Pa., Phila.**—WHOLESALE FOOD CENTER—Greater Philadelphia Movement, c/o Harry Batten, N. W. Ayer Bldg., plans by George Howe & Robert Montgomery Brown, 1728 Spruce St., wholesale food center, two motels, truck service center, office bldgs., power plant. $100,000,000. Thomas McCormick, 123 S. Broad St., engr. CD 4/9.

▲ **Pa., Phila.**—GARAGE, etc.—Nine-Ten Chestnut Corp., Widener Bldg., plans by the Ballinger Co., 121 N. Broad St., parking garage and 4 stores, 910-16 Chestnut St. $1,500,000.

▲ **Pa., Pittsburgh** — RESEARCH CENTER — Pittsburgh Plate Glass Co., Gateway Center, Pittsburgh, plans by Skidmore, Owings & Merritt, 575 Madison Ave., New York 22, N. Y., research center, Fox Chapel. $4,000,000. Slocum & Fuller, 207 E. 32 St., New York 16, N. Y., consult. engrs. CD 12/23.

▲ **Pa., Tyrone**—MILL—West Virginia Pulp & Paper Co., 230 Park Ave., New York, N. Y., pulp and paper mill. $30,000,000.

▲ **Tex., Tyler**—PLANT, etc.—General Electric Co., 570 Lexington Ave., New York, N. Y., plant for mfr. home cooling units, $12,500,000; plant area grading, general earthwork, drainage, lighting, paving, $100,000; warehousing and storage, $300,000, near here. CD 8/6/53, under LB.

▲ **Va., Lynchburg**—PLANT—Babcock & Wilcox, 161 W. 42 St., New York, N. Y., plant for manufacture fuel elements and reactor core components for nuclear power. $2,000,000.

▲ **B. C., Vancouver**—SUB-STATION—British Columbia Electric Co., 426 Carrall St., plans by Sharp & Thompson, Berwick, Pratt, 1553 Robson St., power substation, 45 St. and East Blvd. $1,600,000.

▲ **Ont., Malton**—PLANT EXPANSION—A. V. Roe Canada Ltd., Malton, plant expansion, $5,000,000; aircraft plant extension, hangar, laboratory 3 other buildings, incl. factory and office space, $750,000. CD 4/17/53.

▲ **Ont., North Bay**—PLANT—Du Pont Co. of Canada Ltd., 1135 Beaver Hall Hill, Montreal, Que., explosive plant on 3,500-acre site 5 mi. southeast of here. Over $1,000,000.

▲ **Que., Montreal**—FACTORY—Canadian International Paper Co. Ltd., Sun Life Bldg., new container factory on Sherbrooke St. E., in Pointe aux Trembles area. $2,000,000. Wesley Bennett, c/o owner, ch. engr.

UNCLASSIFIED

▲ **Massachusetts**—BEACH REHABILITATION—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, rehabilitation Scusset Beach northern end of Cape Cod Canal, Bourne, Barnstable Co. $1,000,000.

▲ **New York**—RICHMONDTOWN RESTORATION—Dpt. Parks, Arsenal Bldg., New York, plans by Frederick R. King, 32 E. 57 St., New York Zone 22, restoration of Richmondtown on 40-acre tract, to comprise about 30 bldgs., Richmond Boro. $3,000,000.

▲ **Pennsylvania**—AAA FACILITIES—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Special AAA facilities, Pittsburgh Area. $3,000,000. Michael Baker, Jr. Inc., Rochester, consult. engr.

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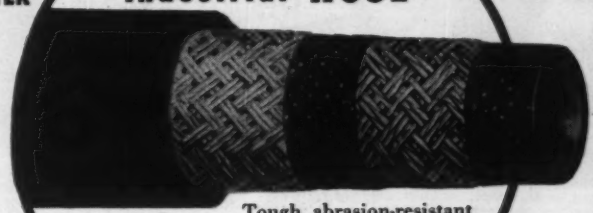

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
March 29 Massachusetts

▲† Vt., Burlington—AIR NATIONAL GUARD FACILITIES—BA On Or About 4/22—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., constr. Air National Guard Facilities, FY-1955 (1), approx. 212x203 ft. hangar, approx. 160x172 ft. hangar space and 2 story lean to (2) warehouse, motor service shop, paint, oil and dope bldg. (3) steam distr, sys. piping (4) site imprvs., utilities and pavements (a) approx. 28,000 sq. yd. aircraft parking apron of 9 in. portland c. conc. (b) roads, driveways, parking areas (c) electrical, sanitary sewer and water services to bldgs. (d) finish grading, incl. topsoiling and seeding, Burlington Municipal Airport, ENG-19-016-55-100. $1,250,000-$1,500,000. C 12/4/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., Concord,
Frank Palazzi & Sons, Inc., 2321 Hartford Ave., Johnston, R. I., LB $1,087,515. 2.566 mi. 4-lane divided road mix hy., 70 ft. steel beam bridge, two 30 ft. rein.-con. bridges and 197 ft. steel beam bridge on F. E. Everett Turnpike, Manchester. Bids Mar. 11. CD 3/2.

† Wexler Constr. Co., Inc., Newton Highlands, Mass. CA $871,887. roads, utilities, Otis Air Force Base, ENG-19-016-55-74B1, FALMOUTH, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 2/23, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ The Austin Co., 16112 Euclid St., Cleveland, O. CA $1,000,000. Design and construct GRANITE PLANT, near Quarry, BARRE, VT. Rock of Ages Corp., Graniteville, Vt. CD 12/22.

▲ Beverly Hospital, Frederick Ayer Sr., pres., Herrick St., Beverly, Mass. Separate Contracts. $1,500,000. HOSPITAL addn., BEVERLY, MASS. CD 7/23.
Jefferson Constr. Co., 75 First St., Cambridge, Mass. CA $664,176. HIGH SCHOOL Packard St., HUDSON, MASS. Town, Hudson. Mass. CD 3/7, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 7 New Jersey
STREETS AND ROADS
April 7 New Jersey

▲ † N. Y., Plattsburgh—SAC SPECIAL PACKAGE, etc.—BA 4/21—U. S. Eng., 111 E. 16 St., New York, SAC special package and ammo storage, FY 55, Plattsburgh Air Force Base. $1,000,000-$3,000,000. Extended date. CD 2/17.

BIDS ASKED—BUILDINGS

▲ Md., Towson—SCHOOL—BA 3/30—Baltimore Co. Bd. Educ., Aigburth Rd., Zone 4, steel, masonry Sudbrook Junior High School, $1,500,000. Plans deposit $50. Hopkins & Burton, 10 E. Mulberry St., Baltimore, Zone 2, archts. CD 2/23.

Pa., Donora—SCHOOL—BA 3/31—School Dist. of Carroll Twp., R.D. Donora and State Public School Bldg. Auth., 101 S. 25th St., Harrisburg, 2 story bsmnt., brick, steel, concrete Junior High and Grade School, Carroll Twp., near here. $850,000. Plans deposit $35. C. C. & E. E. Compton, 419 Thompson St., archts. CD 2/18/53.

▲ N. J., Princeton—SCHOOL—BA 4/5—Princeton Boro Bd. Educ., Moore St., high school $1,715,000. Lawrence C. Light, 19 Knickerbocker Rd., Englewood, archt. Saul Shaw, 24 Commerce St., Newark, engr. CD 11/18/54.

▲ Pa., Wayne—OFFICE—BA 4/6—American Telephone & Telegraph Co., 400 Hamilton Ave., White Plains, N. Y. (selected list of bidders) long lines central office bldg. $2,750,000. Lorimer & Rose, 254 W. 54 St., New York, N. Y., archts. CD 4/5.

SOON LETS CONTRACT—BUILDINGS

▲ Md., Laurel—LABORATORY—Johns Hopkins Applied Physics Laboratory, 8621 Georgia Ave., soon lets contract Silver Spring, laboratory wing, $1,500,000. Voorhees, Walker, Foley & Smith, 101 Park Ave., New York 17, N. Y., archts. CD 3/15.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ General Railway Signal Co., 230 Park Ave., New York 17, N. Y., CA $2,462,280, block signalling, etc. Culver Yard from Kings Hy. Station to Van Siclen Station, Contr. S-77, Brooklyn Boro, NEW YORK. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids Feb. 18. CD 3/14 under LB.

▲ PENNSYLVANIA—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Central Pennsylvania Quarry, Stripping & Constr. Co., Box 378, Hazelton, Pa., CA $2,563,168. constr. 2.73 mi. (Sec. 36-E) Northeastern Exten. in Parryville Boro and East Penn and Mahoning Twps., Carbon Co. Bids Mar. 1. CD 3/4, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Mohawk Homes, Inc., c/o H. T. Krieger, pres., c/o H. J. Luddington Co., Ellicott Square, Buffalo, N. Y. Owner Builds. $2,300,000. 200 ranch HOMES, off Stony Point Rd. and Elsie Lane, GRAND ISLAND, N. Y.

Bayview Apartments, c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn 2, N. Y. Owner Builds. $950,000. 6 story APARTMENT, 84-50 169 St., JAMAICA, N. Y. CD 1/26.

▲ Harry Firester, c/o A. N. Sirof, archt., 207 E. 37 St., New York 16, N. Y. Owner Builds. $1,000,000. Monaco SURF CLUB, 20-acre tract, Lido Blvd., LIDO BEACH, N. Y.

▲ 408 West 57 St. Corp., 158 Irving Pl., Woodmere, N. Y. Owner Builds. $1,000,000. 10 story APARTMENT, 408-418 W. 57 St., NEW YORK, N. Y. CD 2/16.

▲ George A. Fuller Co., 597 Madison Ave., New York 22, N. Y. CA $5,000,000. 19 story APARTMENT, 78-84 Park Ave., NEW YORK, N. Y. Syndicate, George J. Engler, pres., c/o Kahn & Jacobs, archts., 2 Park Ave., New York 16, N. Y. CD 1/20/54.
Lenhill Apartments, Inc., 1790 Broadway, New York 19, N. Y. Owner Builds. $950,000, 6 story APARTMENT, 340-50 E. 74 St., NEW YORK, N. Y. CD 1/6.
▲ 3130 Grand Concourse, Inc., 349 E. 149 St., New York, N. Y. Owner Builds. $1,000,000. 6 story APARTMENT, 3130 Grand Concourse, NEW YORK, N. Y. CD 2/16.

▲ York, 64 St. Corp., 31-53 Steinway St., Long Island City, N. Y. Owner Builds. $1,800,000. 12 story APARTMENT, 414-436 E. 64 St., NEW YORK, N. Y. CD 2/16.

▲ Chanin Corp., 122 E. 42 St., New York 17, N. Y. Owner Builds. $30,000,000. 80-store SHOPPING CENTER to incl. branch of Gimbels Department Store and J. C. Penney Stores, VALLEY STREAM, N. Y. Irwin S. Chanin, c/o owner, archt. (Correction-cost). CD 1/17, under CA.
Martin Infante Co., Inc., 194 Westervelt Pl., Lodi, N. J., CA, $980,850, SENIOR HIGH SCHOOL and alterations to JUNIOR HIGH SCHOOL, GLEN ROCK, N. J. Bd Educ., Glen Rock, N. J. Bids Jan. 5. CD 1/17 under LB.

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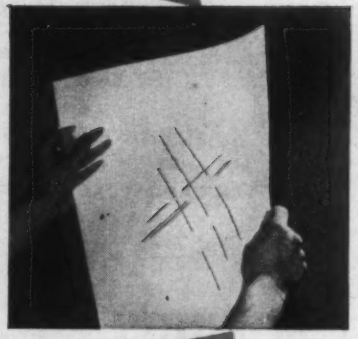

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▲ Scott-Shaw, Inc., Cypress Gardens, Oriental Ave., Gloucester, N. J. Separate Contracts. $55,000,000. 4,000 unit RESIDENTIAL DEVELOPMENT, SHOPPING CENTER and sewage treatment plant, MARLTON, N. J. Lester H. Weckesser, Erlton, N. J., archt.

▲ Luxury Homes, Inc., att. Tony Baker, 1025 Witherspoon Bldg., Phila., Pa. Separate Contracts. $12,500,000. 1,250 unit RESIDENTIAL DEVELOPMENT Deftford Twp., WOODBURY, N. J. Dante D'Anastasio, 1815 Federal St., Camden, N. J., archt.

▲ Seventh Corp., 551 Home Rd., Merion, Pa., CA $2,700,000 . 180 RESIDENCES, Candlebrook Sect., GULPH MILLS, PA. The Candlebrook Co., 1528 Walnut St., Phila., Pa. Charles Whitaker, 816 Lancaster Ave., Bryn Mawr, Pa., archt.

▲ Gwynedd Valley Builders, Inc., 4 Main Line, Professional Bldg., Narberth, Pa. Separate Contracts. $2,500,000. RESIDENTIAL DEVELOPMENT, Upper Gwynedd Valley Twp., NORTH WALES, PA.

▲ National Realty Corp., 3004 Ridgewood Ave., Baltimore 15, Md. Owner Builds. $1,520,000. ninety-nine 1 story, frame DWELLINGS, 6300 and 6500 blocks, Laurelton Ave., Fernbank Ave., Louise Ave., Catalpha Rd., 2300 and 2400 blocks Welshire Ave., Westfield Ave., BALTIMORE, Md.

▲ Rockingham Builders, Inc., 1504 Dennis Ave., Silver Spring, Md. Own Forces. $1,170,000. 90 HOMES, Forest Estates, SILVER SPRING, MD.

▲ Kay Constr. Co., 3206 Weiler Rd., Wheaton, Md. Owner Builds. $5,687,500. 325 brick detached HOMES, addn. to Connecticut Avenue Estates, WHEATON, MD. Bartley & Gates, 11710 Kingtree St., Silver Spring, Md., archts.

▲ Gordy & Son, Inc., New Castle, Del., Separate Contracts, $12,000,000. 1,000 RESIDENTIAL DEVELOPMENT, Janvier Park, WILMINGTON, DEL.

Baton Constr. Co., 1717 Sansom St., Phila., Pa., LB, $800,000, Central TELEPHONE OFFICE, WILMINGTON, DEL. Diamond State Telephone Co., 1401 Arch St., Phila., Pa. G. Morris Whiteside 2nd, 909 Tatnall St., Wilmington, Del., archt.

▲ Gordy & Son, Inc., New Castle, Del., Separate Contracts, $1,000,000. 60-unit RESIDENTIAL DEVELOPMENT, Westover Hills, WILMINGTON, DEL.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 13 Louisiana

STREETS AND ROADS

March 29 West Virginia April 13 Louisiana

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ FLORIDA—State Road Dpt., Tallahassee, Duval Eng. & Constr. Co., 1746 E. Adams St., Jacksonville, Fla., CA $1,643,665 riverside link to Fuller Warren Bridge in Jacksonville, Florida Expressway Sys. Fed. Aid Proj. IN-I-003-7 (8), Job 7202-279 and Job 7202-179, Duval Co. Bids Jan. 3, awarded Mar. 14. CD 1/7, under LB.

† Satchwell Electric Constr. Co. Inc., 2922 Old St. Augustine Rd., Jacksonville, Fla., CA, $934,999 special ordnance facilities, MacDill Air Force Base, ENG-08-231-55-63, TAMPA, FLA. U. S. Eng., P. O. Box 4970 Jacksonville, Fla. Bids Feb. 24. CD 1/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Little Constr. Co. Inc., Builders Bldg., Charlotte, N. C., LB $1,045,762, four 132-bed COTTAGES; and two 40-bed COTTAGES, Butner Training School, BUTNER, N. C. State Hospitals Bd. Control, Capitol Bldg., Raleigh, N. C. H. Raymond Weeks, Inc., Durham, N. C., engrs-archts. Bids Mar. 3. CD 11/18/53.

▲ Goode Constr. Corp., Builders Bldg., Charlotte, N.C. CA $1,174,000, 44,000 sq. ft. BANK alterations, addns., CHARLOTTE, N. C. Federal Reserve Bank of Richmond, c/o J. N. Pease & Co Inc., engr.-archt., 119½ E. 4 St., Charlotte, N. C. Bids Feb. 7.

▲† H. L. Coble Constr. Co., 1705 Battle Ground Ave., Greensboro, N. C., LB $1,220,876. Phase II, constr. Charlotte Ordnance MISSILE PLANT, CHARLOTTE, N. C. U. S. Eng., Customhouse, Wilmington, N. C. Bids Mar. 9. CD 10/15.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ Ind., Greensburg—BA 4/12—City, City Hall, water project, incl. surface water reservoir, pumping station; water treatment plant, elevated tower and tank foundation; imprvs. well water supply; large tank; raw water force mains exten. city water distr. sys. $1,000,000. CD 4/23/54.

BIDS ASKED—BUILDINGS

▲ Mich., Mount Clemens — HOSPITAL — BA 4/12 — Mount Clemens Hospital, John C. Zemke, administrator, hospital, Grossbeck Hy. and Harrington Blvd. $1,500,000. Plans deposit $25. refundable, Giffels & Vallet, Inc., and L. Rossetti Associated Engineers & Architects, 1000 Marquette Bldg., Detroit, engrs.-archts. CD 8/24/54, under Public Buildings.

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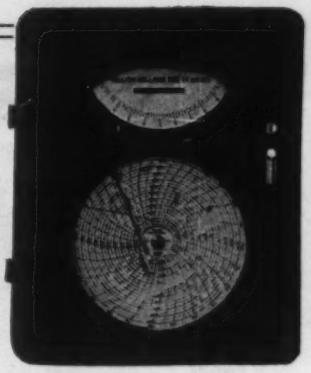

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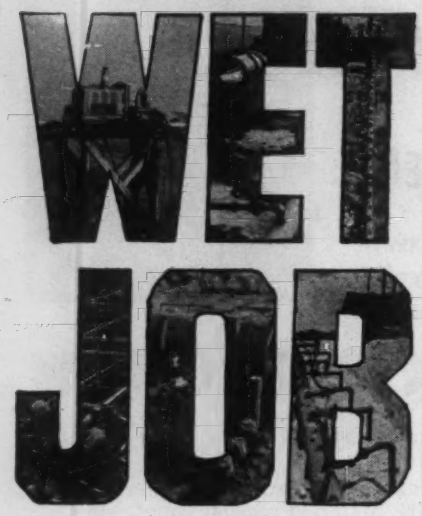

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SOON LETS CONTRACT—BUILDINGS

▲ **Ill., Calumet City**—HOTEL,etc.—Owner, c/o John Bartolomeo, archt., 10836 S. Western St., Chicago, soon lets contract hotel, motel, swimming pool, parking at 147 St., and Calumet Expressway, $1,000,000.

▲ **Ill., Chicago**—HOTEL—Owner, c/o A. Epstein & Son Co., archts., 2011 Pershing Rd., soon lets contract hotel, 5538 South Shore Dr., $1,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield,

Central Engr. Co., P.O. Box 838, Davenport, Ia., CA, $1,029,301, c. conc. 8.12 mi. F.A. 7, Lee and Whiteside Counties. Bids Feb. 25, awarded Mar. 14. CD 3/2, under LB.

▲ **Chas. J. Wilson Co.**, 760 Wentworth Ave., Chicago, Ill., CA $728,733, earth embankments, diversion ditches, culverts, Lincoln Hy. to Sauk Trail Calumet Expressway;

Hedges Constr. Co., 100 N. La Salle St., Chicago 2, Ill., CA, $1,063,873, paving Cicero to Kostner Aves., Congress Expressway, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. Bids Feb. 7, awarded Mar. 10. CD 2/16, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Eaton General Contractors**, 901 Citizens Bldg., Cleveland, O. Owner Builds. $26,000,000. 1,500 contemporary ranch style, brick veneer HOMES, four-building SHOPPING CENTER to be called New Northgate Development, Detroit and Conrad Rds., AVON, O.

▲ **R. S. Ursprung Co.**, Hanna Bldg. Annex, Cleveland, O., CA $1,469,399, general trades work on 32-room Junior HIGH SCHOOL, BEREA, O. Bd. Educ., Berea, O. CD 11/6/53.

▲ **Zane Constr. Co.**, Public Square Bldg., Cleveland, O. Owner Builds. $1,170,000. 65 ranch Type brick veneer HOUSES, Wallings Rd., BROADVIEW HEIGHTS, O.

▲ **Zaremba & Sons, Builders**, 5675 Turney Rd., Garfield Heights, O. Owner Builds. $2,400,000. one hundred and sixty 1½ story HOMES, E. 148, 150, 151 Sts. between Harvard Ave. and Judson Dr. S. E., CLEVELAND, O.

▲ **Robert W. Setterlin & Sons Co.**, 2000 Kenny Rd., Columbus, O., CA $847,321, general constr. CLASSROOM and ADMINISTRATION BLDG. for College of Agriculture;

Garwick & Poss, Inc., 990 W. 3rd Ave., Columbus, O., CA $781,200, general constr. BASIC SCIENCE UNIT for College of Veterinary Medicine, at Ohio State University, COLUMBUS, O. Ohio Dpt. P. Wks. State Dpts. Bldg., Columbus, O. CD 1/17.

▲ **George A. Fuller Co., 1st Natl. Bank Bldg.**, Pittsburgh, Pa., CA Est $2,500,000. 17,800 sq. ft. GLASS FURNACE and PRODUCTION FACILITIES addn., 216,000 sq. ft. WAREHOUSE addn. and annex for ground floor OFFICES, COLUMBUS, O. Kimble Glass Co., 711 Southwood Ave., Columbus, O.

▲ **Joseph Lukek**, 600 E. 305 St., Willowick, O. Owner Builds. $8,000,000. 415 home subdivision to be called "Willo-Rush Estates," Lakeland Blvd. and E. 305 St., WILLOWICK, O.

▲ **H. D. Tousley Co.**, 925 E. St. Clair St., Indianapolis, Ind., CA, $40,000,000, PLANT, incl. 812,000 sq. ft. mfg. bldg., 22,000 sq. ft. power plant, 49,000 sq. ft. office, 200,000 gal. water tank, 175 ft. chimney, plus waste processing plant and 1800-car parking lot southeastern edge of city at junction of U.S. 31 and Nickle Plate R.R. on 155-acre tract, KOKOMO, IND. Chrysler Corp., 1103 S. Home Ave., Kokomo, Ind. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., archt. Awarded Mar. 12. CD 3/2.

▲ **Gradishar Builders**, 6725 Ogden St., Berwyn, Ill., Own Forces, $1,100,000. 75 HOMES, WESTCHESTER, ILL.

J. O. Richardson, 105½ Van Buren St., Woodstock, Ill., Own Forces, $800,000, 40 HOMES, WOODSTOCK, ILL.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

April 1 Minnesota, North Dakota

STREETS AND ROADS

March 29, 30 Colorado April 1 Minnesota, North Dakota

▲ † **Tex., San Antonio**—BOQ—BA About 4/26—U. S. Eng., P.O. Box 1229, Galveston, constr. of BOQ (200 nurses) constr. 5 story bldg. with part bsmnt., approx. 88,000 sq. ft. drilled footing, concrete frame masonry walls, steam heat with convectors, mechanical ventilation, incl. two elevators for BOQ (200 nurses). Utilities, incl. 1,500 lin. ft. 6 and 8 in. storm drains, approx. 1,000 lin. ft. 6- to 10-in. sanitary sewers; approx. 500 lin. ft. 6 in. water lines; approx. 500 lin. ft. 6 in. gas line; electrical underground, flexible base pavement, approx. 1,000 sq. yds.; sidewalks, site grading and sprigging, for Brooke Army Medical Center, ENG-41-243-55-53. $1,000,000-$5,000,000. CD 5/14.

BIDS ASKED—BUILDINGS

▲ **Neb., Omaha**—NURSES HOME—BA 3/29—University of Nebraska, 12 and R Sts., Lincoln, nurses home at University of Nebraska Medical College and Hospital. $1,000,000. John Latenser & Sons, 1307 Farnam St., archts. CD 8/4.

▲ **Mo., St. Louis**—SCHOOL—BA 3/31—Bd. Educ., V. Harry Rhodes, comr. School Bldgs., 911 Locust St., Zone 1, brick, rein.-con., Ames Elementary School, 2900 Hadley St. $1,000,000. Extended date. CD 3/7.

▲ **Tex., Aldine** — HIGH SCHOOL — BA 4/5 — Aldine Independent School Dist., Aldine, Senior High School. $1,400,000. Plans deposit $50. Kiefner & Werlin, 3501 Buffalo Dr., Houston, archts. R. L. Jenkins, 4316 Blossom St., and Walter P. Moore, 2 Pinedale St., Houston, engrs. CD 11/10.

SOON LETS CONTRACT—BUILDINGS

▲ **Kan., Wichita**—HOSPITAL—Wesley Hospital, 550 N. Hillside St., soon lets contract hospital addn. $1,500,000. Forsblom & Parks, Beacon Bldg., archts. CD 4/14/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Anderson & Sons, Inc., 100 N. Seventh St., Minneapolis, Minn. LB $984,646. c.conc. 9.8 mi. between 1.5 mi. southwest of Belle Plaine and Jordan, Scott Co.

Chippewa Constr. Co., Granite Falls, Minn. LB $239,982 grav. base, road-mixed bit. surf. 18.6 mi. between Manley and Jasper, Rock Co.;

E. W. Coons, Inc., Hibbing, Minn. LB $82,708. grav. base, plant-mixed bit. surf. 2.8 mi. between 1.1 mi. southwest and 1.9 mi. northeast of Beaver Bay and in Beaver Bay, Cook and Lake Counties;

H. J. Frederickson, Cannon Falls, Minn. LB $151,459. grading 5 mi. between Northfield and 6 mi. southeast of Northfield, Rice Co.;

Hallett Constr. Co., Crosby, Minn. LB $317,340. grading c.conc. 13.3 mi. between Jct. TH 81 and Ada, Norman Co.; LB $239,008. c.conc. 1.4 mi. in Ada, Norman Co.;

Megarry Bros., St. Cloud, Minn. LB $174,268. plant-mixed bit. surf. 20.2 mi. between Eagle Bend and Wadena, Todd and Wadena Counties. LB $117,449. plant-mixed bit. surf. 12.5 mi. between Warroad and Roosevelt, Roseau Co.; LB $269,281. grav. base, road-mixed bit. base 27.6 mi. between Big Falls and Pelland, Koochiching Co.;

Minnesota Valley Improvement Co., Granite Falls, Minn. LB $87,049. grav. base, road-mixed bit. surf. 9.4 mi. between Goodland and 4 mi. south of Jct. TH 169, Itasca Co. Bids Mar. 11. CD 2/25.

▲ † **Peter Kiewit Sons Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., LB $1,075,985. addnl. airfield paving, Phase II, Altus Air Force Base, ENG-34-066-55-57, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Mar. 9. CD 3/2.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Hagstrom Constr. Co.**, 1567 Selby Ave., St. Paul, Minn. CA $1,582,500. general contract 1 story, part second floor Como Park Junior High SCHOOL, Maryland and Dale Sts., ST. PAUL, MINN. Bd. Educ., F. E. Conner, supt., L. E. Kinvig, city purch. agt., 253 City Hall, St. Paul, Minn. CD 1/19, under LB.

▲ **Frank W. & Robert Wear**, 7510 Grant St., Omaha, Neb. Owner Builds. $2,000,000, 152 DWELLINGS grading, streets, paving, utilities, OMAHA, NEB. L. E. Wilkie, 513 S. 20 St., Omaha, Neb., archt.

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Mo. CA $1,200,000. 192,000 sq. ft. paper box PLANT, 17 acre tract bounded on north by Kindleberger Rd., south by Sunshine Rd. and west by Brinkerhoff Rd., KANSAS CITY, KAN. Hinde & Dauch Paper Co., Chas. Frohman, pres., Adams and Kansas Sts., Kansas City, Kan. CD 1/6/54.

Mead & Mount Constr. Co., 1560 Denver Club Bldg., Denver, Colo., CA, $919,000. general contract 1 and 2 story, 72,000 sq. ft. brick, steel HIGH SCHOOL, LITTLETON, COLO. School Dist. No. 6, 177 South Grant St., Littleton, Colo. Bids Mar. 2, awarded Mar. 7. CD 3/10, under LB.

FAR WEST

BIDS ASKED—BUILDINGS

▲ **Calif., Long Beach**—SCHOOL—BA 4/8—Long Beach Bd. Educ., 715 Locust Ave., 2 story, rein.-con. Robert A. Millikan High School. $4,850,000. Hugh Gibbs, 441 E. 1 St., archt. CD 12/9/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **CALIFORNIA**—State Div. Hys., P. Wks. Bldg., Sacramento

MacDonald, Young & Nelson, 351 California St., San Francisco and **Morrison-Knudsen Co., Inc.**, 74 New Montgomery St., San Francisco, Calif., LB $5,213,162, separation structure, roadwork, etc. between San Francisco-Oakland Bay Bridge at 4 and Main Sts., San Francisco, San Francisco Co. Bids Mar. 2. CD 2/2.

▲† **Clyde W. Wood & Sons, Inc.**, 6900 Tusunga Ave., North Hollywood, Calif., LB $1,623,018, imprv. Los Angeles River, Wardlow Rd. to Willow St., CIVENG-04-353-55-27, Los Angeles Co., CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar 10. CD 2/16.

▲† **Vinnell Co., Inc.**, 1145 Westminister Ave., Alhambra, Calif., LB $1,169,943, relocating 2 hangars, etc., Edwards Air Force Base, ENG-04-353-55-111, MUROC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 10. CD 2/28.

▲† Gordon H. Ball, 300 Camille Ave., Danville, Calif., CA $1,093,778, operational apron, George Air Force Base, ENG-04-005-55-91, VICTORVILLE, CALIF. U. S. Eng., 751 St Figueroa St., Los Angeles, Calif. Bids Feb. 17, awarded Mar. 2. CD 2/2.

BUILDINGS

LOW BIDS AND CONTRACTS

Lakewood Estates Imprvt. Co., 11587 San Vicente Blvd., Los Angeles, Calif. Owner Builds. $993,800, 111 frame, stucco DWELLINGS, in N. Spahn, N. Faust, and Edgefield Sts., BELLFLOWER, CALIF.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 6 British Columbia
STREETS AND ROADS
April 4, 13, 27 Ontario

▲ New Brunswick—BA 3/31—New Brunswick Electric Power Comn., 527 King St., Fredericton, main dam, power house substructure and instake for Beechwood power development. St. John River, Perth. Total est. $45,000,000. J. L. Feeney, c/o owner, ch. engr. Shawinigan Eng. Co., Ltd., 600 Dorchester St. W., Montreal, Que., engrs. CD 4-23.

▲ Ontario and Quebec—BA 4/14—St. Lawrence Seaway Auth., No. 2, Temporary Bldg., Ottawa, Ont., excavation of channel in Lachine Section of St. Lawrence Seaway. CD 9/9.

BIDS ASKED—BUILDINGS

B. C., Vancouver—HOUSING UNITS—BA 4/5—Central Mortgage & Housing, 2286 W. 12 St., 100 frame housing units, Sea Island, $850,000. J. L. Adams, 2286 W. 12 Ave., engr.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Commonwealth Constr. Co. Ltd., 300 Royal Bank Bldg., Winnipeg, Man., CA, $1,500,000. WAREHOUSE, Ellice Ave. between Center and Express Sts., WINNEPEG, MAN. Marshall-Wells Co. Ltd., Market and Rorie Sts., Winnipeg, Man. Bids Feb. 28, awarded Mar. 10. CD 2/4.

▲ Austin Co. Ltd., 2 King St. E., Toronto, Ont., subsidiary of Austin Co., Cleveland, O., U.S.A., CA, $7,000,000, 68-unit SHOPPING CENTER and 32,000 sq. ft. FOOD MARKET, HAMILTON, ONT. Greater Hamilton Shopping Centre Co., c/o contractor.

▲ Anglin-Norcross Quebec Ltd., 892 Sherbrooke St. W., Montreal, Que., CA Est. $4,500,000. OFFICE, Sherbrooke St. W. and Aylmer St., MONTREAL, QUE. Five-Fifth Sherbrooke St. W. Corp., c/o Dr. P. Joseph, 1510 Drummond St., Montreal, Que. Irving S. Backler, 4838 Fulton Ave., engr. Greenspoon, Freedlander & Dunne, 4151 Sherbrooke St. W., and M. M. Kalman, 1200 St. Alexander St., Montreal, Que., archts. Awarded Mar. 10. CD 1/14/53.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† Alaska—MILITARY INSTALLATIONS—BA 4/21—U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., military installations, incl. bldgs., access roads fuel storage facilities, utilities, etc. at Bethel, Cape Chiniak, Homer, Fort Yukon, Kotzebue and Unalakleet. Inv. 55-63. $2,500,000. Plans deposit $250. CD 7/31/47, under Alaska, Fort Yukon, and CD 12/13 others.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† Anchorage Builders Inc. and Kincaid & King Constr. Co. Inc., Box 897, Spenard, Alaska, LB $1,049,630, est. $942,947 paving, hardstands, parking areas, sidewalks, curbs and other street imprvs., Inv. 55-35, FORT RICHARDSON, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Mar. 9.

LATIN AMERICA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Societe Generale d'Exploitations Industrielles (SOGEI) and Concorcio de Ingenieros Contratistas Generales, Lima, Peru. CA Est. $7,000,000. Canyon de Pato Hydro-electric plant to supply power to steel mill, CHIMBOTE, PERU. Republic of Peru, Lima, Peru. ENR 4/26/45.

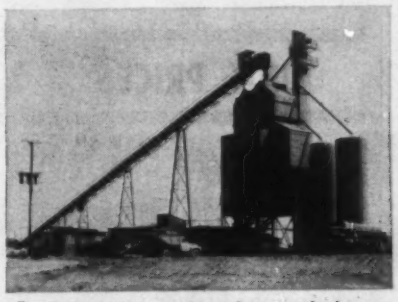
▲ English Electric Co. Ltd., Marconi House Strand, London, England; Etudes et Enterprises, S.A. France; Societe Nationale de Travaux and Publics, S.A. France (Anglo-French Combination) LB Est. $58,000,000. hydro-electric plant, Rio Negro, URUGUAY. Usinas Electricas y Los Telefonof, Republic of Uruguay, Montevideo, Uruguay. Bids Feb. 11. CD 5/25.

BUILDINGS

LOW BIDS AND CONTRACTS

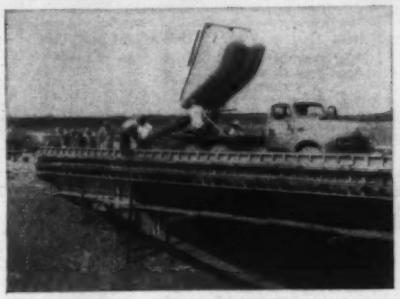
▲ Les Establissements Delattre & Frouard Reunis and Consorcio de Ingenieros Contratistas Generales, Lima, Peru. CA Est. $6,000,000. completing Chimbote STEEL MILL, CHIMBOTE, PERU. Republic of Peru, Lima, Peru. CD 5/31/51.

(Proposal Advertisements see pp. 98 to 103)



1. Central plant produces 3 types of mixes

2. Dumpcretes haul 4 yds. to paving site



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- Demountable legs—easily moved
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32" x 32" with 18" legs
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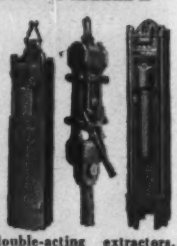

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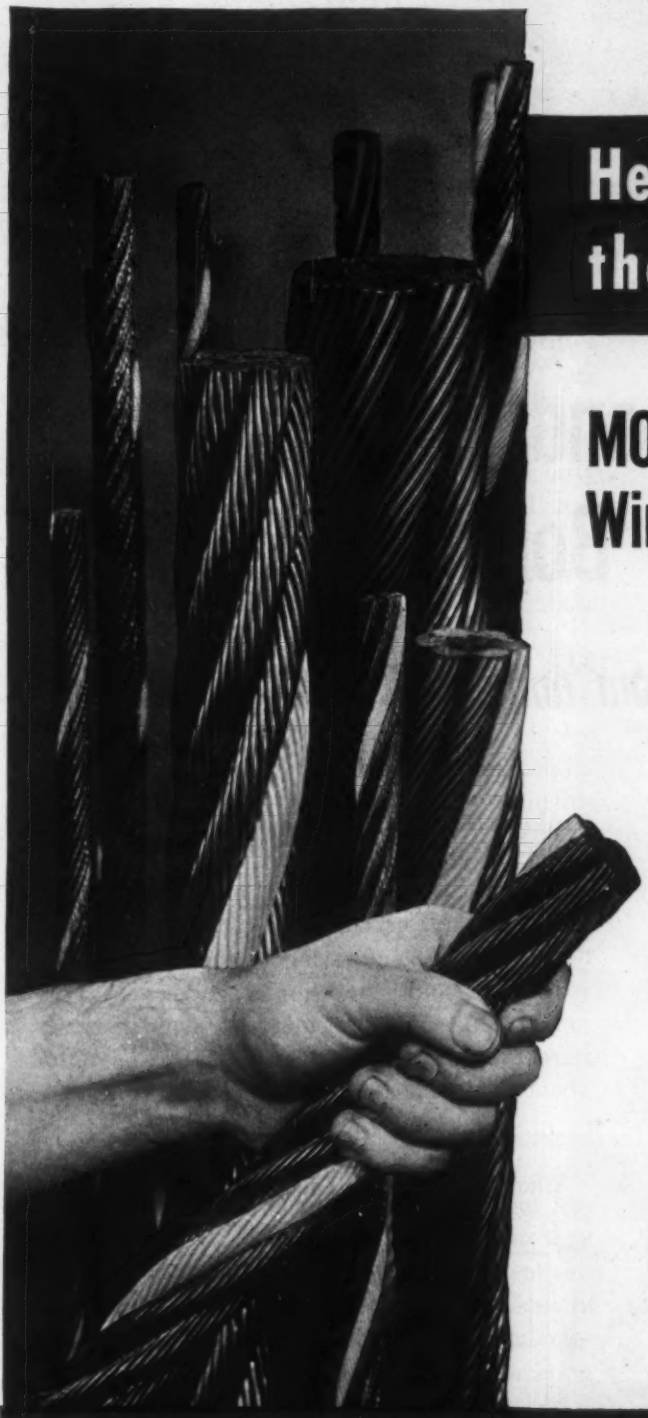
Kentucky Road Costs Fall

Prices of most major bid items on Kentucky highways dropped in 1954. Major exception was excavation. Average unit prices for successful bids on principal items show the trend.

Item	Unit	RS* 1954	Other than RS 1954	Other than RS 1953
Aggr, grav, bank or crk	t	$0.85	$0.87	$1.03
Aggr, grav, bank or crk, river	cy	....	....	1.00
	t	2.08	2.05	2.23
Aggr, limestone:				
base & or insulation	t	....	3.09	3.06
bit mix	cy	6.33	6.15	6.98
rdwy & entrance	t	2.58	2.82	....
#610, entrances	t	....	....	2.77
penetration	t	....	....	3.18
seal	t	....	....	4.23
#6 & #10, roadway	t	....	....	2.62
Aggr, slag, base, ins mx	t	....	....	4.49
seal	t	....	....	4.49
Approach slabs, cmt conc	sy	....	....	12.00
Asph emuls, RS1 penetr	gal	....	....	0.13
RS2 penetr	gal	....	....	0.14
Bit et aggr, not classif	cy	....	....	18.13
binder, cl F	cy	....	....	7.68
surf, cl F	cy	....	....	13.62
Bit conc base, cl I	cy	....	10.91	11.05
binder, cl I	cy	....	10.95	12.64
binder, cl 1	t	....	....	7.26
hand patch	t	....	....	15.20
mach patch	cy	....	11.36	11.63
mach patch	t	....	....	7.23
surf, cl I	cy	....	11.53	11.72
	t	....	....	7.27
mach patch, cl I or H, br floors	cy	....	....	11.25
	sf	....	0.23	0.36
Bit matl, mix, not cl	gal	....	0.13	0.14
MC-4	gal	0.13	....	....
prime or tack, not cl	gal	....	0.14	0.16
seal, not classified	gal	....	....	0.16
Catch basins, ditch	ea	....	....	151.00
roll curb	ea	....	....	167.75
#1	ea	....	....	279.40
#1, trapped	ea	....	....	381.11
#2	ea	....	....	300.00
#2, double	ea	....	....	500.00
#3	ea	....	....	300.00
valley gutter, trapped	ea	....	....	380.00
adjust	ea	....	....	21.76
capping	ea	....	....	25.00
remove	ea	....	25.34	38.96
Clear & grub	ac	....	70.46	80.28
Clear & grub	mi	584.34	....	609.76
Concrete, cl A	cy	49.46	50.79	53.91
B	cy	....	49.12	59.70
D	cy	179.14	174.25	170.90
Crib wall, CM	sf	....	....	6.00
Curb, header	lf	....	....	2.68
integral	lf	....	0.81	0.65
lip	lf	....	....	0.98
roll	lf	....	....	3.00
concrete, remove	lf	....	....	0.68
stone, remove	lf	....	....	0.74
Curb & gutter, concrete	lf	....	2.55	2.82
roll type	lf	....	....	3.03
remove	lf	....	0.71	0.38
Ditches, pulling	mi	....	....	274.79
Ditching & shouldering	mi	313.82	278.75	424.01
Ditch, surf, 1 sf area	lf	....	0.11	0.15
2 sf area	lf	....	0.16	0.29
Earthwork	mi	5,397	....	10,357
Edge key	lf	....	....	0.32
Excavation, borrow	cy	....	0.37	0.68
roadway	cy	....	0.50	0.46
struct, common	cy	4.02	6.20	4.56
solid rock	cy	9.76	10.86	11.82
uncl	cy	....	10.50	4.65
Fence, chain link	lf	....	....	3.81
stone, rem	lf	....	....	2.25
Fertilizer, commer, 6-8-6	t	....	....	79.99
10-6-4	t	....	81.92	81.14
10-10-10	t	....	83.58	....
Final dressing	sta	....	17.34	17.41
Fire hydr, rem & reset	ea	....	....	75.00
Floorg, brg, met, uncl	sf	....	1.83	2.03
Flume, concrete	lf	....	5.35	5.44
inlets	ea	....	201.25	167.35
wet stone masry	sy	....	....	10.00
Guard rail, beam type	lf	....	2.67	....
safety beam	lf	....	....	3.83
not classif	lf	....	....	3.56
met	lf	....	....	3.90
remove	lf	....	0.56	0.68
Gutter, concrete, valley	sy	....	6.20	5.37
remove	lf	....	....	0.78
Handrail, pipe	lf	....	4.34	17.43
cl D conc	lf	....	....	15.00
conc, remove	lf	....	....	2.00
Headwalls, remove	ea	12.41	7.10	7.59
Hedge, remove	lf	....	0.78	0.77
reset	lf	....	0.87	0.93
Honeysuckle, Hall's	ea	....	0.58	0.45
Inlet, curb & gutter 12"	ea	....	130.95	238.06
12" trapped	ea	....	....	300.00
15"	ea	....	253.77	231.78
rural pipe 12"	ea	....	....	127.50
18"	ea	....	....	100.00
24"	ea	....	....	150.00
lip curb 15"	ea	....	....	150.00
18"	ea	....	....	250.00
valley gutter 12"	ea	....	....	380.00
15"	ea	....	....	200.00
18"	ea	....	....	194.89
24"	ea	....	....	210.00
Junction box	ea	....	....	232.75
trapped	ea	....	....	260.00
Kudzu crowns	ea	....	....	0.74
Limestone, agricultural	t	....	7.30	6.68
Manholes	ea	....	247.98	275.72
adjust	ea	....	30.40	28.72
remove	ea	....	....	100.00
Masonry, dry stone	cy	....	....	40.00
rem	cy	....	3.77	2.37
first class	cy	....	....	37.50
wet stone	cy	....	....	36.90
rem	cy	....	4.79	4.88
concrete, rem	cy	7.67	9.02	7.03
Monuments, project	ea	34.89	35.07	36.05
Overhaul	stay	....	0.01	0.02
Pavement, cmt conc	sy	....	4.06	4.46
rem	sy	....	1.17	1.11
entrances 6"	sy	....	5.69	5.61
rem	sy	....	....	0.72
Piling, conc 14" furn	lf	5.43	5.25	4.75
drive	lf	5.17	4.98	4.70
18" furn	lf	....	....	6.87
drive	lf	....	....	6.66
18" furn	lf	....	....	6.51
drive	lf	....	....	6.06
Piling, steel, 10" furn	lf	5.03	....	3.04
drive	lf	5.03	....	2.22
12" furn	lf	....	3.83	4.64
drive	lf	....	2.45	4.13
Pipe culvert, BCCM 15"	lf	....	....	3.40
18"	lf	4.31	4.34	4.33
24"	lf	6.04	6.41	6.22
30"	lf	8.10	....	7.50
36"	lf	11.68	....	....
42"	lf	12.78	....	12.50
RC, 12"	lf	....	....	3.16
15"	lf	3.07	2.77	3.52
18"	lf	3.67	3.69	3.82
24"	lf	5.33	5.23	5.46
30"	lf	7.44	7.32	8.55
36"	lf	9.90	10.31	10.19
42"	lf	12.79	13.11	12.78
48"	lf	16.55	16.37	16.97
54"	lf	19.98	....	19.67
60"	lf	....	....	25.00
24" ex st	lf	6.06	....	5.86
30"	lf	....	....	8.13
36"	lf	....	....	10.92
42"	lf	....	....	14.00
48"	lf	....	....	19.16
Pipe entrance, CM 15"	lf	2.70	2.74	2.76
18"	lf	3.36	3.37	3.27
24"	lf	4.77	4.91	4.76
30"	lf	....	6.47	6.11
36"	lf	....	....	8.85
42"	lf	....	....	10.21
48"	lf	....	....	12.50
54"	lf	....	....	19.10
RC 15"	lf	2.74	2.83	2.76
18"	lf	3.57	3.71	3.53
24"	lf	4.91	5.07	5.11
36"	lf	9.88	....	....
Pipe entr, rem & relay	lf	1.80	1.74	....
Pipe, remove	lf	1.27	1.05	1.27
relay	lf	1.11	1.11	1.27
Pipe arch 18" x 11" CM	lf	....	....	5.00
22" x 13" CM	lf	....	....	4.70
36" x 22" CM	lf	....	....	9.00
43" x 27" CM	lf	13.43	....	12.50
58" x 36" CM	lf	....	....	15.72
65" x 40" CM	lf	23.20	....	....
72" x 44" CM	lf	27.29	....	23.69
6'5" x 4'10"CM	lf	....	....	35.00
Pipe, sewer, 6" PC	lf	....	....	1.70
8"	lf	....	....	1.77
Plates, expansn, bronze	lb	1.31	1.30	1.30
Rock asphalt	t	....	14.42	15.10
Seeding & protection	sy	....	0.08	0.09
Sidewalk, concrete, 4"	sy	....	3.68	3.90
rem	sy	....	0.61	0.42
brick, remove	sy	....	....	0.45
Slope protection	sy	5.62	4.97	5.43
Sodding	sy	....	0.71	0.55
Spring box, type A	ea	170.00	....	254.33
remove	ea	....	....	20.00
Stabilized base	sy	....	....	0.10
Steel, reinforcement	lb	0.13	0.12	0.13
structural	lb	0.22	0.23	0.34
Steps, conc, rem	cy	....	....	13.25
Strip, median, 4"	sy	....	....	5.65
4'	lf	....	....	3.59
Tar, RT-2, prime	gal	....	0.21	0.22
refined	gal	0.21	....	....
Trees & stumps, remove	ea	....	47.00	40.96
Timber, creosoted	Mfbm	335.68	348.38	357.34
Water	Cgal	0.10	0.13	0.07

* RS rural secondary



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FINANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Are Living on Borrowed Time

. . . time borrowed from underpaid faculty members

The chart on this page tells a story of profound importance to every American. It is the story of the financial beating our college and university faculty members have been taking in the past 14 war and postwar years.

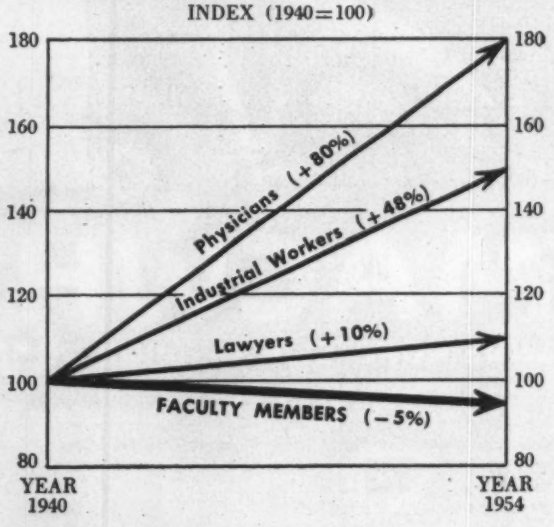
On the whole, this span of 14 years has been one of great and growing prosperity. But, as the chart shows, our college and university faculty members have, as a group, had less than no share in it.

During this period, from 1940 through 1954, the real income of the average industrial worker (that is, what his wages would purchase in goods and services) has increased by almost one-half. Among professional groups, physicians have enjoyed an increase of about 80 per cent in their real income. Lawyers, far less favored financially, have had an increase of about 10 per cent. But faculty members have not only had no increase at all; over these years of prosperity their average real income has fallen by 5 per cent. These figures do not take account of the increase in taxes since 1940.

Senior Teachers Hardest Hit

These figures are, of course, averages. For some groups of faculty members it has been better; for others worse. It has been particularly hard on senior faculty members. Between 1941 and 1953 their salaries lost about 8 per cent of their purchasing power. Being deeply committed to their careers they could not respond to alternative employment opportunities as readily as could their junior colleagues. For junior faculty members there was some increase in real income between 1941 and 1953 but only about half as much as the average for the nation.

What's Happened to College Faculty Salaries*



* Real Income before Taxes.

Source: Council for Financial Aid to Education; U. S. Dep't of Commerce; U. S. Dep't of Labor.

Public Colleges Fare Better

There are also marked differences in the average financial reward received by faculty members in different types of colleges and universities. A recent study by the Council for Financial Aid to Education indicates that, in the last academic year, 1953-1954, teachers in privately endowed, independent colleges and universities were paid an average salary about $1000 less than that paid to faculty members in tax-supported institutions. The same study indicates that salaries far below the average are especially common for faculty members in the small private liberal arts colleges. This study found that during the last academic year the average salary of all college and university faculty members was about $4700.

The special difficulties under which the independent colleges and universities, and particularly the independent liberal arts colleges, are laboring to get back on their feet financially have been discussed in previous editorials in this series. These difficulties underline the need of special help for these institutions to which business firms are now contributing in increasing volume. However, the problem of providing better salaries is not peculiar to any particular type of institution.

Faculty Members Not Greedy

It is not easy to prescribe a precise standard of fair pay for college and university faculty members. This is partly because they put less weight relatively on money rewards than they put on rewards of scholarly accomplishment and prestige. Consequently, they have consistently been willing to work for very modest salaries in relation to the intellectual ability, education and application required. Obviously, however, it is the dictate both of fairness and good judgment to see that faculty members are given a roughly proportionate share in the general prosperity. Indeed, their crucial role in our society could be made to justify a larger share than this.

There is no way to know with any degree of precision what the underpayment of our college and university faculty members over the past 14 years has actually cost the nation in terms of reduced quality of intellectual performance of those institutions. One reason is that the damage has been minimized by the devoted services of many faculty members who have loyally stuck to their jobs in spite of the great financial discouragement.

It is obvious, however, that, if no grave deterioration in the intellectual performance of our colleges and universities has occurred so far, it is because we have been living on borrowed time. It is time borrowed from faculty members who have, in effect, been subsidizing these institutions by their financial sacrifice. This arrangement is not only a menace to the cultural and intellectual life of the nation, it is also a menace to our national security in a time when successful national survival may well depend in peculiar degree on the full development and utilization of our intellectual resources. We depend on our college and university faculties pre-eminently to provide this development. Adequate financial reward for such service is an elementary form of national insurance.

Many of our colleges and universities are working hard to improve the financial lot of their faculty members. Business firms are also playing an increasing role of providing the necessary financial assistance. The methods being used by business for this purpose will be the subject of another editorial in this series. However, **vastly more must be done, and quickly, to stop the financial beating being taken by our college and university faculty members if the nation's welfare and safety are to be properly protected.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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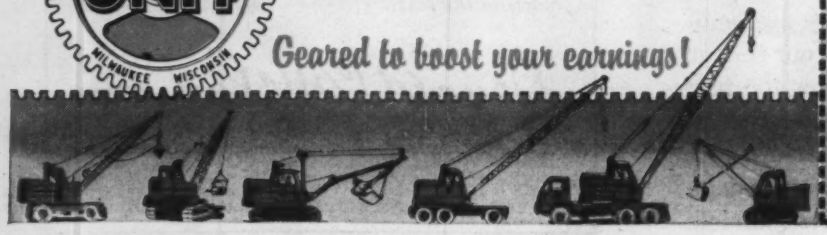

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$400-Million Home Tract Started by Texas Builder

Frank Sharp, Houston developer, applies lessons learned from past projects in planning 25,000-home subdivision

The citizens of fast-growing Houston, Texas, are used to thinking in large terms. Last week they had something new to talk about—a projected $400-million residential subdivision that may be the biggest in the U. S. so far. The project is Sharpstown, a 6,500-acre tract planned for 25,000 homes in the $12,000-$17,000 price class.

Plans for Sharpstown are based on past experience with large residential projects. Its developer is Frank W. Sharp, a 48-year-old Texan who has developed several other subdivisions in the Houston area. Sharp's plan is to stay out of building the homes themselves, but to put in community facilities and sell lots to builders. He figures this will give small builders a chance to get in on the act. Sharp has already bought 4,000 acres, has an option on 2,500 more.

So far, 51 builders have bought lots in the first section of Sharpstown and have started building. (Their contracts have already been reprinted in ENR.) Sharp does not control the builders. They have formed their own committees to set up ground rules. Sharp's office is in charge of overall planning and keeps builders informed.

• **Developer keeps commercial sites**—Sharp will retain control of commercial sites—including a projected $30-million shopping center—and will lease to tenants. Past experience of other large builders has indicated that ownership of commercial properties brings the largest profit margin in a mass building operation.

Sharp plans to center his community around several country clubs, the first of which is now under construction. These clubs will provide golf, tennis, swimming, and other recreation for all age groups. The hope is that all residents will be members, and that the clubs will be "full-blown community play centers." Sites have been planned for eight schools, and a number of locations have been set aside for churches.

• **Wide boulevard**—The developer plans to widen Bellaire Blvd., a six-mile highway that runs east and west through the middle of the tract, to four lanes, with an esplanade in the center. He has already converted the first mile, through the section where homes are being built. The State Highway Department has plans for a freeway running in a southwest-northeast direction through Sharpstown, providing another quick route to downtown Houston.

Other unusual features that Sharp plans: moving sidewalks in the main shopping center, a heliport on top of one of the buildings in the center, plus underground bomb shelters.

Business Construction Plans Are up for 1955

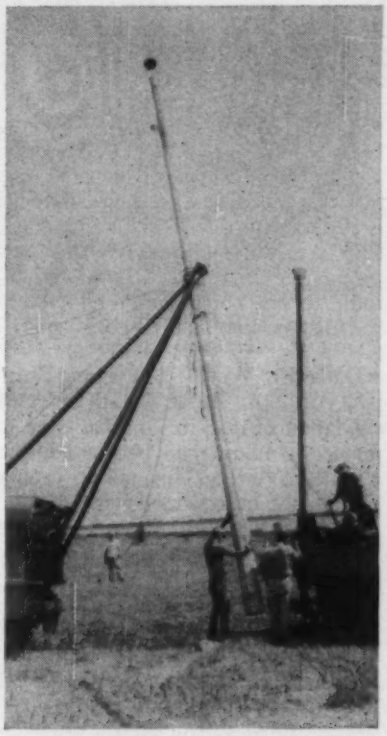
The outlook for construction by business looks quite promising for the rest of this year. That's the way government economists see it. Estimates of capital spending for new plants and equipment, released last week by the Commerce Department and the Securities and Exchange Commission, indicate the spending will rise in the second half of this year over the first six months. This would be the first time in two years that business capital spending has turned up.

The government seers expect that capital spending will total $27.1 billion this year, compared with $26.8 billion last year. The gains will be in public utilities and commercial work—areas where construction men get a relatively big share of capital expenditures. The forecast is that manufacturers will actually spend less for plant and equipment.

Alcan Plans to Double Kitimat Aluminum Capacity

Aluminium Ltd., of Montreal, plans to more than double capacity of its big smelter at Kitimat in British Columbia. The job will cost $190 million, according to Alcan's president, Nathanael V. Davis.

The program would increase Kitimat's present planned annual capacity of 152,000 tons by another 180,000 tons. Production at Kitimat started last August, and this new announcement is the second time that planned capacity has been stepped up. The entire expansion program is expected to be finished by 1959. The $190-million program includes some expansion of present alumina facilities on Jamaica in the Britist West Indies.



Concrete Pole Developed For Transmission Lines

Florida Power Corp., St. Petersburg, reports its experiments with a 35-ft reinforced concrete pole for transmission lines have been so successful that it is now working on a 45-ft pole. Previous experiments by other groups had proved unsuccessful. Florida Power started looking for a substitute for wooden poles because of their cost and because of their relatively short life span.

H. K. McKean, vice president for operations, believes that a 45-ft pole is probably the maximum length that can be fabricated satisfactorily and economically by casting methods. But he says designs have been prepared for 65-ft and 70-ft prestressed poles.

The 35-ft poles also have been tried out for street-light purposes, where they are reported to cost one-third as much as comparable metal poles, as well as being stronger.

Legalities Delay Financing Of Three Toll Projects

Two bond validations and a lawsuit are holding up three toll-road projects that were expected to have been started by now.

Last week, Wall Streeters got some definite information about the long-pending Florida turnpike from Hollywood to Ft. Pierce. A decision is expected within a few days from the Florida Supreme Court on validating the $74-million bond issue to pay for the 104-mi pike. Financing will follow soon after.

The Florida project, usually referred to as the "bobtail," will be officially known as the Sunshine State Parkway. The nickname comes from the fact that the Hollywood-Ft. Pierce segment is part of a broader turnpike program, the key feature of which is the proposed $207-million, 276-mi inland route to run north from Ft Pierce to the Georgia line (ENR Feb. 10, p. 23).

• **Dallas-Ft. Worth**—The Texas Turnpike Authority also is waiting for court validation of its $58.5-million issue to finance a 40-mi road between Dallas and Ft Worth. This public agency should not be confused with the private Texas Turnpike Co., which seeks financing for a road from the Dallas-Ft. Worth area to Houston.

• **Illinois**—The biggest toll financing of them all—the $400-million Illinois Toll Road Commission issue—may be held up for some time by property-owners' suits. Financing was originally set for late 1954, then postponed. Later, the commission thought it might go ahead with financing in spite of the pending suits. But recent remarks by Evan Howell, chairman of the commission indicate that he has decided to await the outcome of an appeal to the U. S. Supreme Court. That could take several months.

The Illinois bond issue, incidentally, would be the biggest turnpike financing yet. It includes three separate projects totaling 191 mi.

Detroit Area May Get $45-Million Atomic Plant

Plans for a second big atomic power plant moved forward last week. Detroit Edison Co. announced that Atomic Power Development Associates, a group of 32 companies that has been studying atomic power for several years, plans to build a $45-million plant not far from Detroit. Consolidated Edison Co. of New York has already awarded a contract for a big atomic plant (ENR Mar. 17, p. 89).

Walker L. Cisler, Detriot Edison's president, says that the fast-breeder reactor which the group is considering would generate more than 100,000 kw. Detroit Edison capacity is now 2.5 million kw. The company believes that breeder reactor eventually will produce so much excess atomic power that the fuel used to make electricity will cost "practically nothing." The plant could be built within two years, and could be turning out atom-powered steam in five years.

Business Briefs

• **Trans-Canada Pipe Lines, Ltd.**, has run into a snag on the financing of its proposed 2,200-mi line from Alberta to Montreal and Toronto. The company has not been able to work out a guarantee arrangement with the Canadian government agencies for long-term debt financing.

• **Commonwealth Edison Co.**, Chicago, schedules $420 million of new construction for the next four years, starting with $125 million this year. In 1954, the company spent $121 million.

• **National Gypsum Co.**, Buffalo, has upped its previous expansion program and now has plans to spend $60 million to $75 million through 1960. This includes construction of two gypsum processing plants this year. Other such plants would be built later, as well as paper mills and an asbestos fiber mill.

• **General Motors Corp.**'s Allison Division will spend about $75 million in the next four years for turbo-prop and turbo-jet engine facilities.

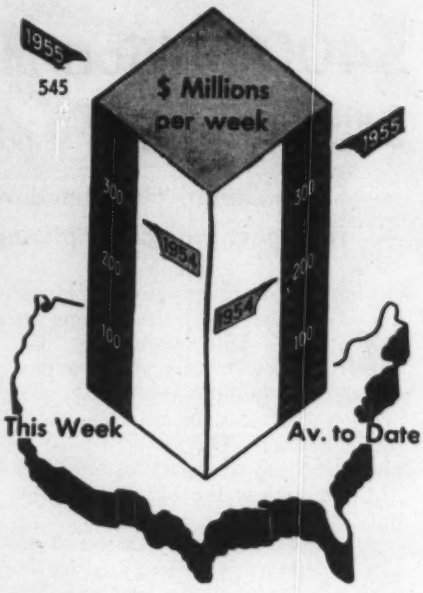
• **Chrysler Corp.** plans to spend $10 million in the next 12 months to expand Detroit engineering facilities. The company has several other big projects under way.

• **Cosely Engineering Co.**, Wolverhampton, England, maker of prefabricated steel frame buildings, has set up a subsidiary in Vancouver, British Columbia. The subsidiary will handle products of the parent company until long-range plans are completed for a Canadian plant on the West Coast.

• **Combustion Engineering, Inc.**, of New York City, is starting to expand plant facilities at Chattanooga, Tenn., for manufacture of nuclear power equipment.

Activity This Week

As reported to ENR
(In millions of dollars)



Amount of contracts let

	This Week	Cumulative 12 wks 1955	1954	% chge
Federal	$26.6	$404.8	$208.6	+96
State and municipal	107.5	1,051.8	923.1	+14
Total public	134.1	1,456.6	1,129.7	+29
Total private	410.7	2,574.6	1,336.8	+93
U. S. Total	$544.8	$4,031.2	$2,466.5	+63
Contracts by type of work				
Waterworks	$5.1	$65.7	$44.6	+47
Sewerage	10.3	90.6	71.5	+27
Bridges	3.8	109.3	99.4	+10
Highways	51.1	407.6	263.5	+55
Earthwork, waterways	2.6	83.9	66.9	+25
Buildings:				
Public, excl. hsg.	33.1	398.8	385.8	+3
Housg., public	2.4	43.0	40.2	+7
Housg., private	210.0	1,576.8	724.5	+118
Commercial	104.1	373.4	247.7	+51
Industrial	64.6	499.2	316.3	+58
Unclassified	57.7	382.9	206.1	+86
Total	$544.8	$4,031.2	$2,466.5	+63

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

New capital for construction

(millions of dollars)

	Week of Mar. 17 1955	Cumulative 11 wks 1955	% chge '54-'55
Corporate securities	$44.1	$645.8	−3
State and municipal:			
All except housing	153.2	869.8	+11
Housing	...	35.6	+13
Federal loans	1.0	19.3	−13
Federal aid	...	...	...
Total non-federal	$198.4	$1,570.6	+4
Federal appropriations:			
In U. S.	...	...	...
Outside U. S.	...	...	...
Total new capital	$198.4	$1,570.6	+4

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction cost	3/17	646.28	310.67	135.48
	3/3†	645.70	310.39	135.36
Building cost	3/17	460.21	248.82	130.82
	3/3†	459.63	248.50	130.65
Volume	Feb.	459	187	133
	Jan.	560	228	162

† Official monthly indexes for March

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Can Anti-Trust Laws Touch Labor?

A contractor's skirmish with piledrivers in California and a federal committee report raise a knotty problem

A costly labor dispute, involving use of precast, prestressed concrete beams and girders, has delayed until next winter, completion of the $3-million Richardson Bay Bridge north of Sausalito, Calif. Similar practices have led to current recommendations for additional restrictive federal legislation (ENR Mar. 10, p. 19).

Last week a truce ended the California work stoppage but the dispute now goes to arbitration. Duncanson-Harrelson Co. and Pacific Bridge Co., contractors, have agreed to withdraw their suit for damages and an injunction against the AFL piledrivers who walked off the job.

Claim of the piledrivers is that the contractors violated the union contract by ordering prestressed concrete beams from Basalt Rock Co., Napa, Calif. Basalt is reported to be paying about $8 a day less than the piledrivers get. Piledrivers' contract calls for payment of "prevailing wage rates" for subcontracted work. The contractors contend the contract does not apply to work at Napa because Basalt is a vendor and not a subcontractor. Arbitration will be concerned with that issue only.

The San Francisco Building and Construction Trades Council is backing the piledrivers "and will continue to do so if they want us to." A council spokesman contends that Basalt Rock is definitely a subcontractor. "Subletting the work to Basalt, and then calling the company a vendor, is just a subterfuge," he says.

Complexity of the basic legal issue is stressed by Attorney General Brownell's special anti-trust investigating committee (ENR Oct. 7, 1954, p. 74), in the final report it has just submitted. The perplexing question is the extent to which the national labor policy limits the application of anti-trust laws. Part of that policy, as announced in the Taft-Hartley Act, is protection of the "workers . . . full freedom of association . . . for the purpose of . . . mutual aid or protection."

According to the committee, Congress resorted to the boycott provisions of the Taft-Hartley Act as a means of plugging some of the holes in the application of anti-trust laws to labor. Activities which have been declared unfair labor practices under those provisions and cited by the committee include:

- Carpenters' picketing and blacklisting of a builder using prefabricated material.
- Strikes against a shingle company as part of a union effort to eliminate use of nonunion Canadian shingles.
- Application of union by-laws designed to encourage strikes to force an employer to refrain from using preglazed sash.

The ability of the Sherman Anti-Trust Act to reach such practices is doubtful, says the committee. Provisions of the Clayton and Norris-La-Guardia Acts and their evolution in the courts have effected a substantial anti-trust exemption for labor. The impressive extent of the exemption is demonstrated by the legislative history of the Norris-La Guardia Act, designed in part to overrule a court decision relating to stonecutters. In that case members of the stonecutters union, employed by building contractors, refused to handle cut stone furnished by a company that wouldn't recognize the union. The refusal was held illegal.

Even more obtuse is the situation where the employer connives with labor in product or market control practices. Most celebrated case involved a union-employer scheme between New York electrical workers and contractors to purchase equipment from none but local union shops. Although the practice was declared an anti-trust violation, the committee says the application of the case "is not yet settled."

To the extent such abuses are not effectively curbed by existing laws, the committee recommends new legislation. It urges extension of the government's power to initiate enforcement action but does not advocate limiting labor's "freedom" as set forth in our avowed national labor policy.

Senate Opens NLRB Gates For Leedom and Kammholz

After a long delay, the United States Senate confirmed with little fanfare President Eisenhower's appointments to the National Labor Relations Board and by-passed, at least for the time being, the interest the Democrats had generated in an investigation of the board's controversial performance (ENR Jan. 13, p. 24).

Wide World photo
Boyd Leedom

The new board member is Boyd Leedom, justice of the South Dakota State Supreme Court. Originally criticized for his "total inexperience" in labor-management relations, Leedom encountered little opposition.

Also confirmed was the appointment of Theophil Kammholz, member of the Chicago law firm of Vedder, Price, Kaufman and Kammholz, as NLRB general counsel. The vote was light and only one senator—Illinois Democrat Paul H. Douglas—indicated opposition. Douglas' objection was to Kammholz' background as an attorney for industry.

When Leedom joins the NLRB, the board will consist of three Republican and two Democratic appointees. Others named by Eisenhower are:

- Chairman Guy Farmer, former NLRB attorney.
- Philip Ray Rodgers, chief clerk of the Senate Labor Committee when the Taft-Hartley Act was adopted.

Truman appointees are:

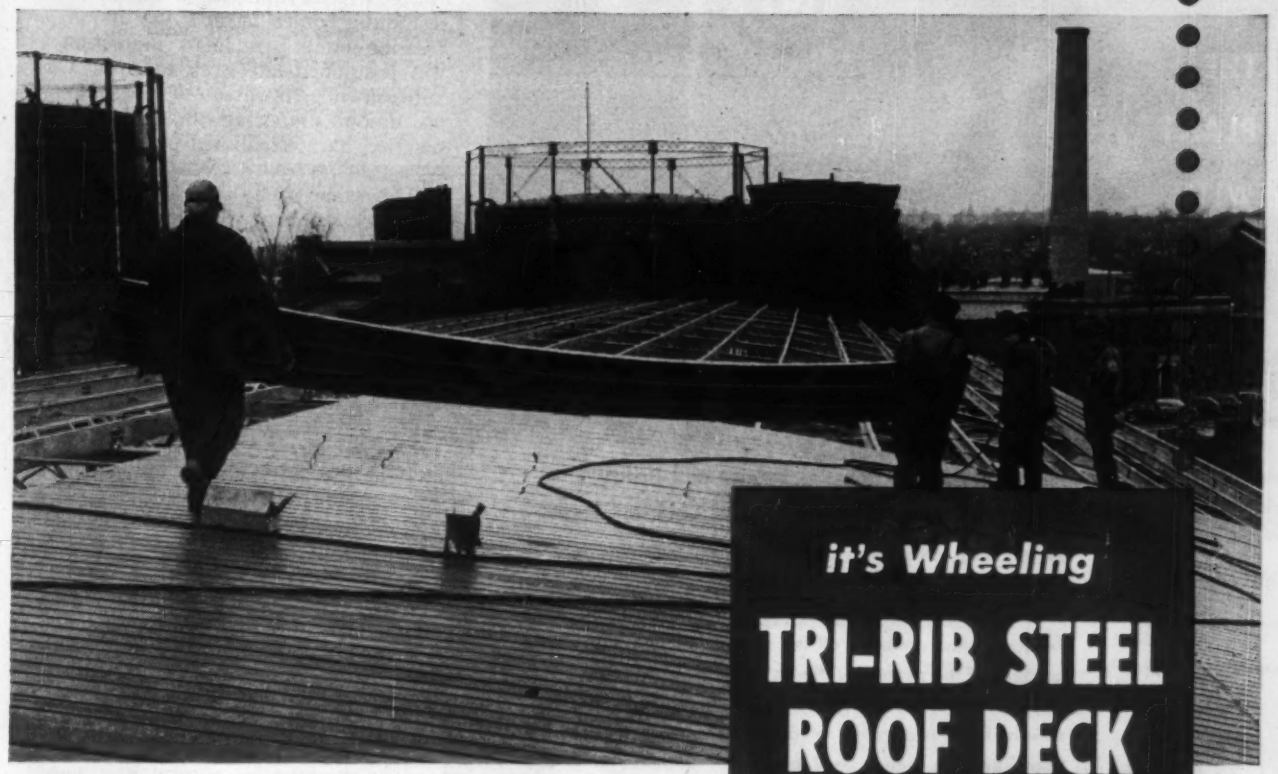
- Abe Murdock, former Democratic Senator from Utah.
- Iver Peterson, former administrative assistant to Sen. Morse.

Airbase Construction Hit By Overtime Pay Dispute

Construction work at Little Rock Air Force Base in Arkansas has run into a snag on overtime pay.

On March 3, members of Local 382, AFL operating engineers, threw up a picket line stopping construction on a $2.4-million grading, drainage and paving job. The work stoppage was a protest against the

Pre-cut, pre-curved roof deck speeds erection time, covers up to 4,000 sq. ft. a day!



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Grooved for quick, easy attachment, Wheeling Tri-Rib Steel Roof Deck covers large areas fast. A crew of 4 can lay up to 4,000 sq. ft. a day. No trick attachments, Tri-Rib spot welds directly to purlins. And by reducing dead load up to 22 lbs. per sq. ft., Tri-Rib permits use of fewer columns, shallower footings, no sub-purlins . . . saves valuable structural steel. Write for full details, or see our catalog in Sweet's.

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METAL THICKNESS: *18, 20, or 22-Gauge Cop-R-Loy Steel sheets.*
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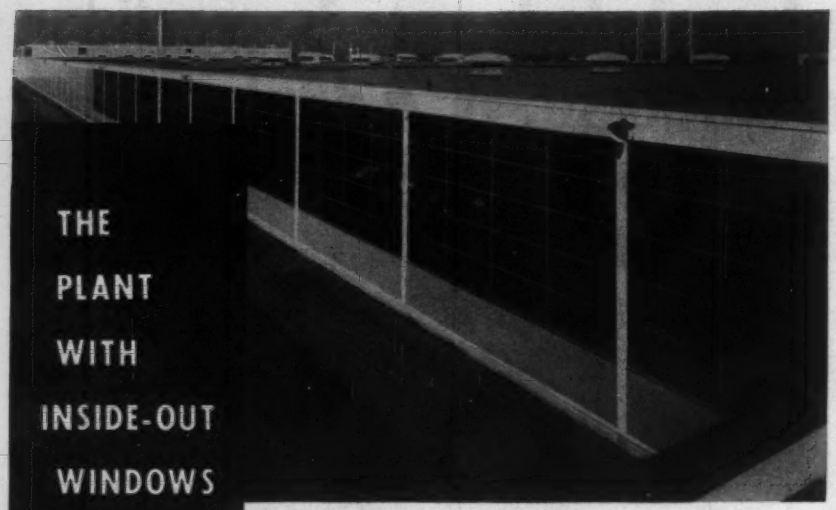

Luxlite Coolite (glare reduced) installed in sidewall sash at Sawyer Biscuit Company, Melrose Park, Illinois.
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LABOR

contractor's non-payment of overtime for Saturday and Sunday work.

Work was resumed March 7 after the contractor obtained a temporary restraining order against the union. Hearing on a permanent injunction was postponed last week to April 1.

Meanwhile, members of the laborers union, protesting the same pay practice, have established picket lines. No action has been taken against them.

The same issue has led to previous work stoppages directed at other contractors at the airbase. Current practice, according to the contractors, stems from the Eight-Hour Law, enacted in 1892. As amended, the law limits the working day for employes of contractors and subcontractors on federal construction to eight hours, unless time-and-a-half is paid for hours in excess of eight. It is contended that in the absence of a union contract to the contrary, overtime rates are not required for hours in excess of 40 a week if the work days are limited to eight hours.

Contractor involved in the present dispute is F and C Engineering Co., a subsidiary of Farnsworth and Chambers Construction Co., Houston, Texas.

In addition to the work which was picketed, the company has a $1.5-million contract for construction, not yet started, of an aircraft wash rack and parking apron at the base.

Labor Briefs . . .

• **Cement masons**—Major demand of AFL cement workers in 46 northern California counties is a seven-hour day with no reduction in daily pay. They're also seeking 3% of gross pay for a vacation fund and an increase of 2½ cents for welfare. Negotiations are now under way with the AGC.

• **Teamsters** — A two-year contract granting a 5-cent increase retroactive to Jan. 1 and a 3-cent increase effective July 1, ended a teamsters strike against sand and gravel pits and ready-mixed concrete plants in the Denver, Colo., area. Original demand was for a 10-cent across the board increase. Pre-strike rates ranged from $1.72 to $1.92.

• **Electricians**—Negotiations between electrical contractors and union electricians in Delaware, in progress without a work stoppage since last November, have resulted in a contract granting an immediate 7½-cent increase, with another 7½-cent increase May 1. This brings the present rate to $3.32½.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record 330 West 42nd Street New York 36, N. Y.

(Continued on following page)

Bids: March 31, 1955

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the Provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 31st day of March 1955, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 3, WILLIAM ROBINSON, District Engineer, 301 E. Water Street, Syracuse, N. Y.						
Onondaga	C 55-2	City of Syracuse: Oswego Boulevard (Park to North Salina St.)	0.28	Asphalt Conc. Opt.	$1,500 Plans $10	$28,000
DISTRICT No. 4, E. G. H. YOUNGMANN, District Engineer, Barge Canal Terminal, Rochester, N. Y.						
Monroe	FATC 55-1	Rochester City: Inner Loop. Proj. U-231(7), U-1089(6)	0.29	Traffic Signal System	$1,300 Plans $10	24,000
DISTRICT No. 5, C. R. WATERS, District Engineer, 65 Court Street, Buffalo, N. Y.						
Chautauqua	FARC 55-5	Penn. State Line–Dunkirk, Pt. 2, S.H. 8334.Proj. F-458(11)	0.57	Asph. Conc., Opt.=0.36 Mi. Misc. Work=0.21 Mi. Widen 3 existing 24′ Span Conc. Slab Bridges	$19,000 Plans $15	343,000
Erie	FARC 55-2	Jamison–East Elma, S.H. 925. Proj. S-409(1)	0.09	Asph. Conc., Opt.=0.06 Mi. Misc. Work=0.03 Mi. Comp. I-Beam Br. 172′	$7,000 Plans $10	132,000
Erie	FARC 55-3	Southwestern Boulevard, S.H. 9269. Transit Road, Pts. 1 & 4, S.H. 9217. Proj. U-1079(4)	0.71	9″ Two Course Cem. Conc. Pavt. 52′ Wide=0.62 Mi. Misc. Work=0.09 Mi.	$15,000 Plans $10	259,000
Erie	FARC 55-6	Lancaster Village, S.H. 915. Lancaster–Alden, S.H. 917. Proj. F-542(4)	4.14	Asp. Conc. Opt.=4.10 Mi. Misc. Work=0.04 Mi. Widen Exist. 29.8′ Span Conc. Slab Bridge	$52,000 Plans $15	943,000
DISTRICT No. 7, ROBERT W. SWEET, District Engineer, 444 Van Duzee St., Watertown, N. Y.						
Clinton	DARC 55-1 DAC 55-1	Plattsburgh–Keeseville, Pt. 1, S.H. 56. City of Plattsburgh: South Peru Street. Proj. D-RD-7(2)	2.76	Asp. Conc., Opt.=2.75 Mi. Misc. Work=0.01 Mi.	$28,000 Plans $15	498,000
DISTRICT No. 8, J. S. BIXBY, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Rockland and Westchester	H.T. 55-1	New York State Thruway—Hudson Section—Sub. 9B (Tappan Zee Bridge & Approaches)	3.39	Lighting Facilities	23.00 Plans $10	386,000
DISTRICT No. 10, M. E. GOUL, District Engineer, Montauk Highway at Little East Neck Rd., Babylon, L. I., N. Y.						
Suffolk	FARC 55-4	Huntington Town Line–Farmingdale, Pt. 1, S.H. 1218. Huntington–Amityville, Pt. 2, S.H. 1219. (Acc. Maywood–Babylon, S.H. 1841. Proj. U-UG-297 (3), D-AD-U-8(2)	4.03 (Acc. 0.47)	9″ Cem. Conc. Pavt. 2 @ 25′ Wide=1.71 Mi. Asp. Conc. Opt.=2.04 Mi. Temp. Asp. Conc. Opt.=0.17 Mi.; Misc. Work=0.11 Mi. (Acc. Rd. Cem. Conc. Pavt.=0.39 M.). (Acc. Rd. Asp. Conc. Opt. =0.08 Mi.). 1 RR Sep. Conc. Rigid Frame 43′. 1 Hy. Sep. Comp. I-Beam 178′	130,000 Plans $50	2,349,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

John W. Johnson,
SUPT. OF PUBLIC WORKS

Bids: April 13, 1955

Indiana Toll Road Commission
309 W. Washington Street
Old Trails Building
Indianapolis, Indiana

NOTICE TO BIDDERS

Contract No. C-6

Sealed proposals will be received by the Indiana Toll Road Commission at or before 11:00 A.M., Central Standard Time, April 13, 1955, for the performance of the contract enumerated above.

The grading, drainage, structures and paving of approximately 2.75 miles in Construction Section C-6 of the Indiana East-West Toll Road beginning at a point a distance of approximately 2,202 feet westwardly from the centerline of Indianapolis Boulevard in the City of East Chicago at Toll Road Station 552+45 and extending eastwardly to a point on the centerline of U. S. Highway Route 20 in the City of Hammond, a distance of approximately 2,925 feet west of the centerline of Cline Avenue, all in Lake County, Indiana.

This project also includes the construction of bridges and embankments for the relocation of the Chicago South Shore and South Bend Railroad, located as follows: Beginning at a point on the centerline of said Railroad at Station 3525+05, said point being 2,267± feet from the centerline of Indianapolis Boulevard in the City of East Chicago, thence in an eastwardly direction a distance of 2.32 miles to a point on the centerline of said Railroad at Station 3402+83± said point being eastwardly a distance of 4,545± feet from the centerline of Kennedy Avenue in the City of Hammond.

The approximate quantities of the major items of construction are as follows:

Common Excavation	8,200 cu. yds.
Peat Excavation	58,000 cu. yds.
Borrow	1,690,000 cu. yds.
10″ Reinforced Concrete Pavement	61,600 sq. yds.
Hot Asphaltic Concrete Surface Course	3,500 tons
Culvert Pipes and Underdrains	24,500 lin. ft.
Concrete for Structures	8,950 cu. yds.
Reinforcing Steel	1,223,000 lbs.
Fabricated Structural Steel	3,570,000 lbs.
Metal Handrail	3,500 lin. ft.
Steel Piling	8,000 lin. ft.

Copies of the Plans, Specifications and Proposal Forms for said Contract are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road	$ 5.00
Plans, Special Provisions and Proposal Forms, per set, per Construction Section	$25.00
Informational Drawings	
Cross Sections, per set, per Construction Section	$25.00
Soil Plan and Profiles, per set, per Construction Section	$ 5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid for the Contract. The Proposal Guaranty shall be in the form of an acceptable surety bond or a certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 11:00 A.M., Central Standard Time, April 13, 1955, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of the above Contract, if any award be made, will be to the Bidder or Bidders whose Proposal is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION

Charles W. Keating, Secretary-Treasurer — Dr. Dillon Geiger, Chairman

OFFICIAL PROPOSALS
(Continued from preceding page)

Bids: April 5, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 a.m., Eastern Standard Time, the 5th day of April 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania, and publicly opened and read **aloud for the following contracts:**

For the construction of structures and the grading, drainage and paving of the Turnpike Section 371, part of the Northeastern Extension of the Pennsylvania Turnpike in Pittston Township and the Borough of Dupont, Luzerne County, Commonwealth of Pennsylvania. **This section being situated as follows:**

The Erie Railroad crossings used in this description are respectively 1.41 miles southwest and 2.25 miles northeast of the center line of Turnpike intersection with L. R. 665 or T. R. 215.

Beginning at a point approximately 616.5 lineal feet northeast of the center line intersection of the Erie Railroad at Turnpike station 853+75 in Pittston Township, Luzerne County; thence in a northeasterly direction 15,176 lineal feet more or less to Turnpike station 1005+50 at a point approximately 3,540 lineal feet southwest of the center line of the Erie Railroad Branch Line intersection with the center line of the Turnpike in Pittston Township, Luzerne County, a distance of approximately 2.87 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	801,614 cu. yds.
Class IA Excavation	109,040 cu. yds.
Class 2 Excavation	17,605 cu. yds.
Class 2A Excavation	743 cu. yds.
Borrow Excavation	133,074 cu. yds.
Special Subgrade	179,587 sq. yds.
Reinforced Concrete Pavement	108,172 sq. yds.
Class A Concrete	1,657 cu. yds.
Class B Concrete	1,197 cu. yds.
Plain Steel Bars	321,565 lbs.
Fabricated Structural Steel	736,400 lbs.
Median Divider	14,640 lin. ft.
Cast-in-Place Concrete Piling	1,160 lin. ft.

For the construction of structures and the grading, drainage and paving of the Turnpike Section 37J, part of the Northeastern Extension of the Pennsylvania Turnpike in Pittston Township, Luzerne County and the Borough of Moosic, Lackawanna County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 3,490 lineal feet southwest of the center line of track of the Erie Railroad Branch Line intersection with the center line of the Turnpike at Turnpike station 1005+00 in Pittston Township, Luzerne County; thence in a northwesterly direction 18,678.02 lineal feet through two equalities to Turnpike station 134+10 at a point approximately 4,797 lineal feet northwest of the centerline intersection of L.R. 5 and the Turnpike in Moosic Borough, Lackawanna County, a distance of approximately 3.54 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	1,433,000 cu. yds.
Class IA Excavation	260,000 cu. yds.
Class 2 Excavation	26,900 cu. yds.
Class 2A Excavation	4,200 cu. yds.
Borrow Excavation	655,000 cu. yds.
Special Subgrade	138,124 sq. yds.
Reinforced Concrete Pavement	90,017 sq. yds.
Class A Concrete	6,950 cu. yds.
Class B Concrete	9,250 cu. yds.
Plain Steel Bars	1,923,000 lbs.
Fabricated Structural Steel	5,507,000 lbs.
Median Divider	16,218 lin. ft.
Cast-in-Place Concrete Piling	6,290 lin. ft.

Copies of plans, specifications and other contract documents including cross-sections, are on file and open to public inspection at the office of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 22 March 1955. Plans, specifications, cross-sections and other contract documents will be available by this date for inspection or for mailing to prospective bidders. Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of five (5) dollars per copy. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of fifty (50) dollars per set, for each section.

Plans and contract documents, for each section exclusive of cross sections and specifications, may be purchased from the Pennsylvania Turnpike Commission for the sum of twenty (20) dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Remittances are payable by check or P.O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications, contract documents, and cross-sections.

The Pennsylvania Turnpike Commission reserves the right to award each section as a separate contract or in a combined contract.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania
14 March 1955

Bids: May 10, 1955

The Hydro-Electric Power Commission of Ontario

ST. LAWRENCE POWER PROJECT
POWERHOUSE

SEALED TENDERS, in quadruplicate, will be received by The Hydro-Electric Power Commission of Ontario up to 4:30 o'clock p.m. Eastern Daylight Saving Time on

Tuesday, May 10, 1955

for the construction of the Canadian half of the St. Lawrence Power Project Powerhouse, approximately two miles west of Cornwall, Ontario.

The Canadian powerhouse will be a concrete structure approximately 1,500 feet long, 170 feet high and 190 feet wide.

Generally, all permanent equipment and materials including cement, reinforcing steel and aggregate, will be furnished by the Commission.

Sufficient of the work is to be completed by June 1, 1958, for initial powerhouse operation and the whole of the work is to be completed by September 1, 1960.

Copies of the Tendering Documents may be obtained on and after March 15th, 1955, at the office of the Director of Supply, The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, on payment of $50.00 for the first set and $25.00 for each additional set. These charges will not be refunded.

Tendering Documents may be inspected at the above location and at the offices of the following: The Commission's Field Office, Mille Roches, Ontario; Power Authority of the State of New York, 270 Broadway, New York 7, New York; and Uhl, Hall and Rich, 230 Congress Street, Boston 10, Massachusetts.

Each tender must be accompanied by a certified cheque drawn on a Canadian chartered bank for an amount of Two Million Dollars ($2,000,000.00). Provisions for the return of the cheque appear in the Tendering Documents.

The successful tenderer will be required to furnish a performance bond, in the form approved by the Commission, and issued by a bonding company licensed as such in the Province of Ontario and acceptable to the Commission, for One Hundred Per Cent (100%) of the total amount of the contract.

The lowest or any tender will not necessarily be accepted.

E. B. EASSON, Secretary,
The Hydro-Electric Power Commission of Ontario,
620 University Avenue,
Toronto 2, Ontario

Bids: April 5, 1955

Contract 418

CHLORINATING EQUIPMENT

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, April 5, 1955, for Contract 418, for furnishing, delivering, installing and testing chlorinating and appurtenant equipment for the Neversink intake chamber, located in the Town of Neversink, Sullivan county, New York, and the East Delaware intake and Downsville release water chambers, located in the Town of Colchester, Delaware county, New York, and for furnishing and delivering air compressor units for the Rondout, West Branch and Kensico South effluent chambers, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of The City of New York, in the amount of six thousand dollars ($6,000.00), for the proper execution of the Contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in Room 1317, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: March 31, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF TOWERS, GUIDES, SILLS AND DOGS
SPECIFICATIONS NO. PA 5-15078
ST. LAWRENCE CONTRACT NO. P9

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manufacture and furnishing of Towers, Guides, Sills and Dogs for all spillway gates at Long Sault Dam and for all control gates at Iroquois Dam and delivery thereof f.o.b. destination, until 10:30 A.M. Eastern Standard Time on the 31st day of March, 1955 at the Authority's office, 270 Broadway, Hearing Room C on the 6th floor, New York 7, New York, at which time and place proposals will be publicly opened and read aloud.

The work involves the fabrication and delivery of approximately 3,500 tons of structural steel and rails. Bids will be entertained for all the metalwork for any one dam or for both dams in accordance with the bidding schedules. Erection at the site of installation will be done by others.

Plans, specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Plans, specifications and Proposal Forms may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1306, New York 7, New York upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 percent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. Chapin
GENERAL MANAGER

OFFICIAL PROPOSALS

Bids: April 6, 1955

Section A
Notice to Bidders

Lake George, New York
March 15, 1955

PROJECT: Warren County Airport—1000 Foot Runway Extension with Taxiway and Apron,—Electrical

1. Sealed Bids, in duplicate, subject to the conditions contained herein, will be received at the Board of Supervisors, Warren County, Lake George, New York until 11 A.M., E.S.T., April 6, 1955, and then publicly opened and read, for furnishing all labor and materials and performing all of the following work:

A. BASIC CONTRACT—
(1) Lighting for 1000 foot extension to N-S Runway
(2) Lighting for New 2400 foot Taxiway
(3) Lighting for Existing Taxiway
(4) All necessary and required work in the existing Administration Building for furnishing, installing and connecting new regulators for three (3) taxiway circuits including: (a) source of supply from existing building source; (b) Connections between new regulators and existing airport control panel for control of same and (c) feeders from regulators to taxiway lighting equipment in field

2. Copies of the plans and specifications may be obtained from the Board of Supervisors, Warren County, Lake George, New York, upon deposit of ten (10) dollars per set requested. Checks or money orders should be made payable to the order of the County of Warren. The amount of the deposit will be remitted if the unused documents are returned in good condition not later than thirty days (30) after the opening of bids.

3. Plans and specifications may also be obtained at the office of:
Seelye, Stevenson, Value & Knecht
101 Park Avenue
New York 17, New York

4. A certified check or bid bond for a sum of not less than five (5) per cent of the total bid price will be required for each bid, payable to the order of the County of Warren.

5. The successful bidder will be required to furnish a performance bond and a payment bond in form and substance and with sureties approved by the Board of Supervisors, Warren County, each in the amount of fifty (50) per cent of the full amount of the contract awarded. Such bonds shall guarantee faithful performance of the contract and payment of all labor, materials, and equipment costs. The bond shall be executed by a duly authorized surety company.

6. The right is reserved, as the interest of the owner may require, to reject any or all bids, to waive technicalities and to advertise for new proposals, or to proceed to do the work otherwise when the best interests of the owner will be promoted thereby.

7. The right is reserved, as the interest of the owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.
Date March 15, 1955 Lake George, New York

Bids: April 12, 1955

New Jersey Turnpike Authority

NEW JERSEY TURNPIKE AUTHORITY
ADVERTISEMENT FOR PROPOSALS
CONTRACT NO. N-34

Proposals are invited for Contract No. N-34 which involves the application of three (3) field coats of paint to the superstructure steelwork of the Newark Bay Bridge, extending from its east abutment in the City of Bayonne, Hudson County, to Pier W45 just west of Doremus Avenue in the City of Newark, Essex County; of the Newark Viaduct, extending from Pier W45 to Pier W93 located on the east side of the Newark Airport Interchange of the Turnpike in Newark; and of the viaducts for Ramp E, Ramps F and H, Ramp G, and a portion of the Newark Bay-Hudson County Extension, and of the Ramp C and E Bridge, all at the Newark Airport Interchange and west of Pier W93 in Newark; and other incidental work, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The approximate tonnage of superstructure steelwork that is to receive field coats of paint is 36,690 tons.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Standard Time on the morning of April 12, 1955, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after March 21, 1955, at the office of the consulting engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. and at the office of the Authority. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.
NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chariman
March 21, 1955

Bids: April 6, 1955

Section A
Notice to Bidders

Lake George, New York
March 15, 1955

PROJECT: Warren County Airport—1000 Foot Runway Extension with Taxiway, Apron, and Additives—Clearing, Grubbing, Grading Drainage, and Paving.

1. Sealed Bids, in duplicate, subject to the conditions contained herein, will be received at the Board of Supervisors, Warren County, Lake George, New York until 11 A.M., E.S.T., April 6, 1955, and then publicly opened and read, for furnishing all labor and materials and performing all of the following work:

A. BASIC CONTRACT
(1) Clearing and Grubbing including clearing of trees in approach zone for 1000 ft. runway extension.
(2) Grading, drainage and paving for 1000 ft. extension to existing N. S. Runway.
(3) Grading, drainage and paving for extension of existing taxiway to end of runway extension.
(4) Grading, drainage, and paving for 150 ft. extension of existing apron.

B. ADDITIVES
(1) Additive No. 1—Improvement of South Overrun—N. S. Runway.
(2) Additive No. 2—Reconstruction of Sunken Area—Stations 14+75 to 25+10—WNW-ESE Runway.

2. Copies of the plans and specifications may be obtained from the Board of Supervisors, Warren County, Lake George, New York, upon deposit of ten (10) dollars for each set requested. Checks or money orders should be made payable to the order of the County of Warren. The amount of the deposit will be remitted if the unused documents are returned in good condition not later than thirty days (30) after the opening of bids.

3. Plans and specifications may also be obtained at the office of:
Seelye, Stevenson, Value & Knecht
101 Park Avenue
New York 17, New York

4. A certified check or bid bond for a sum of not less than five (5) per cent of the total bid price will be required for each bid, payable to the order of the county of Warren.

5. The successful bidder will be required to furnish a performance bond and a payment bond in form and substance and with sureties approved by the Board of Supervisors, Warren County, each in the amount of fifty (50) per cent of the full amount of the contract awarded. Such bonds shall guarantee faithful performance of the contract and payment of all labor, materials, and equipment costs. The bond shall be executed by a duly authorized surety company.

6. The right is reserved, as the interest of the owner may require, to reject any or all bids, to waive technicalities and to advertise for new proposals, or to proceed to do the work otherwise when the best interests of the owner will be promoted thereby.

7. The right is reserved, as the interest of the owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.
Date March 15, 1955 Lake George, New York

Bids: April 12, 1955

Contract NYA-630.001

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
DEMOLITION OF VACANT STRUCTURES

Sealed proposals for the demolition and disposal of houses and other structures in the vicinity of New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M., Tuesday, April 12, 1955, at which time and place said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.
THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, March 24, 1955

Bids: April 28, 1955

City of Akron, Ohio

Sealed proposals will be received at the office of the Director of Public Service, Municipal Building, Akron, Ohio, until 12 O'clock Noon (Daylight Saving Time) of April 28, 1955 for sewage treatment improvements comprising aeration tanks, pipe gallery, final settling tanks, blower building with diesel engine driven blowers, complete with all piping and appurtenances, at the Akron sewage plant, Botzum, Ohio. The base bid general construction includes all mechanical and electrical work. All proposals shall include the additional capacity, additive alternate "A" and also additive alternate "B" for the addition to the maintenance building.

Copies of the contract drawings, specifications and forms of proposal are on file and may be seen at the office of the Department of Public Service, Division of Sewerage, 501 Municipal Building, Akron, Ohio or at the office of Beiswenger and Hoch, Consulting Engineers, 661 West Market Street, Akron, Ohio.

Full sets of the drawings, specifications and proposal forms may be obtained from the Department of Public Service, Division of Sewerage, Room 501 Municipal Building, Akron, Ohio, by making a deposit, in advance, of one hundred dollars ($100.00), checks payable to the City of Akron, Ohio. This deposit will be refunded in full to all those who submit a formal proposal to the Director of Public Service. All others who take out plans and specifications will be refunded the deposit in full provided all documents are returned prepaid to the City in good condition within fifteen (15) calendar days after the date for receiving proposals. Copies of the specifications may be obtained by making a deposit, in advance, of fifteen dollars ($15.00) which will be refunded upon return of the specifications

(This proposal continued on page 102)

CONTRACTORS
WATCH
THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

(Continued from page 101)

in good condition within (15) days of the day for receiving proposals. Individual sheets of the contract drawings may be purchased at two dollars ($2.00) per sheet C. O. D. but are not returnable nor will the purchase price be refunded. Addenda, when issued, will be mailed only to those of record as having taken out plans and specifications.

Each proposal bust contain the full name or names of the party or parties making the same and of all persons interested therein. Each proposal must be accompanied by a consent of surety from an approved surety company and by a certified or chashier's check on a solvent bank, and made payable to The City of Akron in an amount equal to not less than five (5) per cent of the total amount of the bid for Contract 20. The bid check will be a guarantee that if the proposal be accepted. a contract will be entered into and its performance secured by the required bond; and in default thereof, said check and the amount represented thereby will be forfeited to the city as liquidated damages.

Proposals must be accompanied by the affidavit as to interested parties, and. in the case of corporations not chartered in Ohio, by proper certificate that such corporation is authorized to do business in Ohio.

Bidders must use the printed forms, as none other will be accepted.

The Director of Public Service reserves the right to reject any or all bids, and to waive any informalities in the bids received and to accept any bid which is deemed most favorable to the City of Akron.

The Director of Public Service
LEO. G. WALTER

Ordinance No. 267-1955 March 15, 1955
Advertised—March 19 & 26, 1955

Bids: April 6, 1955

Section A
Notice to Bidders

Lake George, New York
March 15, 1955

PROJECT: Warren County Airport—1000 Foot Runway Extension with Taxiway, Apron, and Additives—Turfing

1. Sealed Bids, in duplicate, subject to the conditions contained herein, will be received at the Board of Supervisors, Warren County, Lake George, New York until 11 A.M., E.S.T., April 6, 1955, and then publicly opened and read, for furnishing all labor and materials and performing all of the following work:

A. BASIC CONTRACT—
- (1) Turfing for 1000 foot extension to existing N. S. Runway
- (2) Turfing for extension of existing taxiway to end of runway extension.
- (3) Turfing for 150 extension of existing apron.

B. ADDITIVES
- (1) Additive No. 1—Turfing of South Overrun—N. S. Runway
- (2) Additive No. 2—Turfing of Sunken Area—Stations 14+75 to 25+10—WNW-ESE Runway.

2. Copies of the plans and specifications may be obtained from the Board of Supervisors, Warren County, Lake George, New York, upon deposit of ten (10) dollars for each set requested. Checks or money orders should be made payable to the order of the County of Warren. The amount of the deposit will be remitted if the unused documents are returned in good condition not later than thrity days (30) after the opening of bids.

3. Plans and specifications may also be obtained at the office of:
Seelye, Stevenson, Value & Knecht
101 Park Avenue
New York 17, New York

4. A certified check or bid bond for a sum of not less than five (5) per cent of the total bid price will be required for each bid, payable to the order of the County of Warren.

5. The successful bidder will be required to furnish a performance bond and a payment bond in form and substance and with sureties approved by the Board of Supervisors, Warren County, each in the amount of fifty (50) per cent of the full amount of the contract awarded. Such bonds shall guarantee faithful performance of the contract and payment of all labor, materials, and equipment costs. The bond shall be executed by a duly authorized surety company.

6. The right is reserved, as the interest of the owner may require, to reject any or all bids, to waive technicalities and to advertise for new proposals, or to proceed to do the work otherwise when the best interests of the owner will be promoted thereby.

7. The right is reserved, as the interest of the owner may require, to revise or amend the plans and/or specifications prior to the date set for opening bids. Such revisions and amendments will be announced by addenda to all prospective bidders.
Date March 15, 1955 Lake George, New York

Bids: April 12, 1955

Contract No. 2

NOTICE TO CONTRACTORS

Notice is hereby given that sealed bids or proposals, enclosed in sealed plain wrapper, bearing the appropriate identification, "Bid for Contract No. 2, Clearing—Vly Creek Reservoir," will be received by the Board of Water Commissioners at its office in the Town Hall, Town of Bethlehem, Delmar, New York, at 7:30 Eastern Standard Time on the 12th day of April, 1955 and then will be publicly opened and read aloud at a meeting of the Board of Water Commissioners to be held at such time and place.

Copies of the plans and specifications may be examined at the office of the Town Clerk of the Town of Bethlehem, New York, 393 Delaware Avenue, Delmar, New York, or at the office of the Engineers, Benjamin L. Smith & Associates, 11 North Pearl Street. Albany, New York; copies thereof may be obtained from the Board and/or Engineers upon payment of Five Dollars ($5.00) for each set of plans and specifications.

Proposals must be submitted on the blank forms provided and in a manner designated therein. Each proposal must be accompanied by a Bid Bond or certified check in an amount equal to Five Per Cent (5%) of the total bid. The Bid Bonds or Certified Checks of all but the three lowest bidders will be returned within three days after the opening of bids, while the remaining bonds or checks will be returned as soon as a contract has been executed. The Bid Bond or Certified Check of the successful bidder will be retained to pay any loss or damage to Water District No. 1 and/or the Town of Bethlehem in the event said successful bidder shall refuse or neglect to enter into a contract in accordance with his proposal. Acceptance of the bid will be contingent upon the fulfillment of this requirement by each bidder.

The Board of Water Commissioners reserves the right to consider bids for a period of Forty-Five Days after their opening, and the right is reserved to reject all bids.

BOARD of WATER COMMISSIONERS,
WATER DISTRICT NO. 1,
TOWN OF BETHLEHEM, NEW YORK.
BY: HAROLD C. BARKHUFF,
CHAIRMAN

Bids: April 14, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge Construction for a section of the Massachusetts Turnpike in the Town of Sturbridge (CONTRACT NO. 51-073) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authority, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 2:00 P. M. of Thursday, April 14, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

Proposal guaranty: $50,000.
Charge for plans and proposal forms $50.00, not refundable.
Charge for printed copy of Standard Specifications $10.00, not refundable.

Complete information at said office of the Authority; at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts; and at office of Section Engineer: Fay, Spofford & Thorndike, 11 Beacon Street, Boston, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN, Chairman
March 19, 1955.

Bids: April 12, 1955

Massachusetts Turnpike Authority

NOTICE TO CONTRACTORS

Sealed proposals for Highway and Bridge construction for a section of the Massachusetts Turnpike in the Town of Palmer (CONTRACT #51-054) will be received at the office of the Secretary-Treasurer, Massachusetts Turnpike Authorty, Room 1059, 80 Boylston Street, Boston 16, Massachusetts until 11:00 A.M. of Tuesday, April 12, 1955, and immediately thereafter will be publicly opened and read in the Surrey Room on the lobby floor of the Hotel Touraine across the street from the Turnpike Authority's offices.

Proposal Guaranty: $120,000
Charge for plans and proposal forms: $60.00 (not refundable. Charge for printed copy of Standard Specifications: $10.00, not refundable.

Complete information at said office of the Authority: at office of General Consulting Engineer to Authority: Howard, Needles, Tammen & Bergendoff, Room 1146, 80 Boylston Street, Boston 16, Massachusetts, and at office of Section Engineer: Chas. T. Main, Inc. 80 Federal Street, Boston, Massachusetts.

Minimum wage and dump-truck rates have been established. Right reserved to waive any informality in or reject any or all proposals. An award will not be made to a Contractor who is not equipped to promptly undertake and complete the work.

By: WILLIAM F. CALLAHAN.
Chairman
March 12, 1955.

U. S. Government

Department of Commerce, Bureau of Public Roads, March 10, 1955. SEALED BIDS will be received at the office of the Bureau of Public Roads, 214 Globe Building, 4th & Cedar Streets, St. Paul, Minnesota, until 11:00 a.m., C.S.T., APRIL 8, 1955, for Minnesota Forest Highway Project No. 3-B2, Chippewa National Forest, Beltrami County, Minnesota. 11.242 miles Grading and Bituminous Surfacing on Cuba-Blackduck Road. The approximate quantities of the more important items are 85,000 cu. yd. Excavation for Borrow, 39,000 cu. yd. Gravel, 191,000 gal. Asphalt, and 10,000 tons Bituminous Concrete. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above, or Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia. H. J. Spelman, Division Engineer.

Bids Postponed

Called for bids by Jersey City Incinerator Authority for the construction of a Garbage and Refuse Incinerator in the City of Jersey City has been postponed from April 22 until April 29, 1955.

Engineering News-Record

Reaches Your Local Contractors

Its distribution among the contractors of any one state is in proportion to the number of contractors situated in that state. The Official Proposal Columns of *Engineering News-Record* offer precisely the same efficient service to municipalities, counties, state and federal departments in every section of the United States.

OFFICIAL PROPOSALS

Bids: April 14, 1955

City of Knoxville, Tennessee

NOTICE TO BIDDERS

Seal proposals, invited by the City of Knoxville, will be received by the City Purchasing Agent at the office of the Purchasing Agent, City Hall, Knoxville, Tennessee, until 10:00 A.M., April 14, 1955, at which time they will be publicly opened and read aloud, and the contracts awarded as soon thereafter as practicable for the construction of a new sanitary trunk sewer and appurtenant structures along Second Creek from Western Avenue north to the intersection of the Lonsdale and Lincoln Park lines north of Emerald Avenue, and the construction of the necessary connecting lines and appurtenant structures thereto.

The main line will consist of installing approximately 2,464 lineal feet of 27" pipe, 4,410 lineal feet of 30" pipe, 1,195 lineal feet of 36" pipe, 464 lineal feet of 30" pipe laid in tunnel section in steel liner, and 740 feet of 36" cast in place concrete sewer in tunnel section. All main line sewers are to be connected with rubber gaskets.

The connecting lines will consist of installing approximately 334 lineal feet of 21" sewer pipe and approximately 3,150 lineal feet of 6", 8", and 10" sewers. All connecting line sewers are to be connected with hot-poured bituminous joints.

Three-hundred and sixty-five calendar days will be allowed for this construction.

The instructions to Bidders, Proposal, Specifications and Plans may be examined at the office of the City Engineer, City Hall, Knoxville, Tennessee. Copies of these Contract Documents may be obtained upon the deposit of twenty-five dollars ($25.00) for any set. Any bidder, upon returning such set promptly and in good condition, will be refunded his deposit, and any non-bidder, upon so returning such set, will be refunded one-half of his deposit.

Each proposal must be accompanied by money or a certified check on a solvent bank or trust company, made payable to the City of Knoxville, in the amount of five per cent (5%) of the total bid, as assurance that the bid is made in good faith.

All bidders must be licensed contractors, as required by Chapter 135 of the Public Acts of 1945, as subsequently amended by the General Assembly of the State of Tennessee.

Attention is called to Section 9 of the Rules and Bylaws adopted April 27, 1945 by the State Board of Licensing General Contractors, Nashville, Tennessee, which reads in part as follows: . . . .

"The architect or engineer shall direct that the number and date of license appear on the envelope containing the bid; otherwise the bid will not be opened."

The City of Knoxville reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interest of the city, after all bids have been examined and canvassed.

CITY OF KNOXVILLE
(SIGNED) CHARLES O. CURRIER
CITY PURCHASING AGENT
DATED: MARCH 4, 1955
KNOXVILLE, TENNESSEE

U. S. Government

Bureau of Reclamation, North Platte River Projects 3955-P9, Casper, Wyoming. UNITED STATES DEPARTMENT OF THE INTERIOR, BUREAU OF RECLAMATION. NOTICE IS HEREBY GIVEN that sealed bids on Specifications No. 703C-369 for furnishing labor and materials and performing all work for STREETS AND WALKS, TRAILER COURT, GARAGES AND UTILITIES, AND TEN 2-BEDROOM RESIDENCES FOR GLENDO GOVERNMENT HOUSING, Oregon Trail Division, Glendo Unit, Wyoming, Missouri River Basin Project, will be mailed to Box 280, Casper, Wyoming or delivered to the office of the Bureau of Reclamation in time for the public opening at 10:30 a.m., Mountain Standard Time, April 14, 1955, at the office of the Bureau of Reclamation, Reclamation Center, Casper, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following offices of the Bureau of Reclamation: R. J. Walter, Jr., Regional Director, Building No. 46, Denver Federal Center, Denver, Colorado; and I. J. Matthews, Projects Manager, Box 280, Casper, Wyoming. No charge for copies of the specifications and drawings furnished for bidding purposes; for all others $2.00 per copy, not returnable. Payments should be made by check or money order payable to the Treasurer of the United States.

I. J. Matthews
Projects Manager

OFFICIAL PROPOSALS

Bids: April 12, 1955

Contract NYA-620.001

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
PAVING AND FLOODLIGHTING FOR GATES 7A AND 8A

Sealed proposals for furnishing and installation of paving and floodlighting for Gates 7A and 8A at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 12, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, March 24, 1955

OFFICIAL PROPOSALS

Bids: April 19, 1955

Contract HP-120.007

THE PORT OF NEW YORK AUTHORITY
HOBOKEN-PORT AUTHORITY PIERS
PIER 3
REHABILITATION OF SUBSTRUCTURE

Sealed proposals for the rehabilitation and widening of the substructure of Pier 3 at the Hoboken-Port Authority Piers, Hoboken, N. J., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, April 19, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one compang (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of the documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York March 24, 1955

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

ESTIMATOR EXPERIENCED in building construction. Permanent position with large general contractor specializing in construction of industrial, commercial and public buildings in Ohio, Michigan and Indiana area. Write fully stating experience, education, salary expected and furnish references. All replies confidential. P-5656, Engineering News-Record.

ASSISTANT ENGINEER wanted by the City of Fulton, New York. Salary $4100 to $4500. Retirement, sick leave, and vacation benefits. Experience in Municipal Engineering preferable. Write or call City Engineer, City Hall, Fulton, New York.

WANTED — STRUCTURAL Steel estimator. Must be experienced in taking off structural steel and miscellaneous iron. Quantities from architects drawings. Permanent position. City Iron Works, 350 New Park Avenue, Hartford, Conn.

PITTSBURGH STEEL Warehouser has opening for man experienced in pricing and selling hot and cold rolled sheets; experience in shear line operation, shearing blanks, etc. a must. P-5810, Engineering News-Record.

WANTED: BRIDGE & Highways designers with office and field experience by consulting engineering firm in Pennsylvania. Give complete details and salary desired. P-5389, Engineering News-Record.

CIVIL ENGINEER public works engineering with progressive municipality 65,000 population. Annual salary $4560-$5760. Write Personnel, Municipal Building, Hamilton, Ohio.

ENGINEERS, DESIGNERS, engineering draftsmen for established consulting firm designing sewers, pumping stations, sewage treatment plants, water supply systems, etc. Structural and hydraulic design, hydraulic computations, specifications. Location, New York State. Give full particulars. Our employees know of this advertisement. P-5856, Engineering News-Record.

(Continued on following page)

ARCHITECTURAL DESIGNERS
STRUCTURAL ENGINEERS
and DRAFTSMEN

For long range industrial program in an established consulting office.

Must be experienced and capable of checking design drawings. Draftsmen experienced in structural steel detailing.

Send complete resume of experience.

SAMBORN, STEKETEE & ASSOCIATES
1214 CHERRY STREET
TOLEDO 4, OHIO

CIVIL ENGINEER

Experienced in design and construction. To take charge of design section. Experience in rolled earth fills and channel design desirable. Salary $5772.00 to 7008.00 Liberal leave and retirement. CHIEF ENGINEER
Riverside County Flood Control
and Water Conservation District
Court House, Riverside, California

ATTENTION!
FACTORY REPS
DEALER SALESMEN

Leading manufacturer of Crawler, Truck and Locomotive Cranes needs Salesman to cover North Jersey, New York, New England. Real opportunity for man with successful sales record to contractors and industrials. Knowledge of territory essential. Reply fully giving age, experience and education, to

SW-5903, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

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$1.80 cents a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
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The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
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Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. for April 7th issue closing March 28th.

ENGINEERS

EUROPEAN AREA
AIR BASE CONSTRUCTION

Long estab. engineering firm needs:

PROJECT SUPERVISORS

Also openings for

..Civil Engineers
(Paving Specialists)

..Mechanical Engineers
(P. O. L. Specialists)

..Electrical Engineers

DEGREE PREFERRED
Administrative ability required

EXCELLENT SALARIES

SEND COMPLETE RESUME

P-5931, Engineering News Record
330 W. 42nd St., New York 36, N. Y.

ENGINEERS

Foreign Service

Graduate Chemical, Mechanical, and Electrical Engineers with minimum of 5 years' experience. For specialized assignments commensurate with qualifications in various phases of project and process engineering. Write giving full particulars regarding personal history and work experience. Please include telephone number.

Recruiting Supervisor, Box 30

ARABIAN AMERICAN OIL COMPANY
505 PARK AVENUE, NEW YORK 22, N. Y.

MECHANICAL ENGINEER

Mechanical Engineer with 10 years experience in board work specializing in heavy bulk and rock handling, crushing and processing equipment arrangement and layout. Must be capable of calculating conveyors, elevators, special equipment and completing arrangements for structural designers. Hospitalization, Insurance, Retirement and other employee benefits. Permanent position in expanding company. Our employees know of this ad. Please submit resume of detailed qualifications, experience and expected salary.

P-5916, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in pulp and paper maintenance for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary with excellent opportunity for advancement. Give detailed resume of experience.

P-5431, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT
(Continued from preceding page)

ESTIMATORS AND take-off men wanted for part time work. Can work at home. Must have a good quantity survey experience on the usual general construction trades. Answer immediately with a sample sheet if possible. P-5874, Engineering News-Record.

YOUNG OFFICE engineer to handle details, drafting, estimating, etc. for smaller Ohio contractor. Submit resume and salary desired. P-5873, Engineering News-Record.

WANTED—YOUNG technically trained man, preferably mining engineer, interested in the field of commercial explosives, their development and sales. Position permanent with excellent opportunity for advancement into executive fields. Location in eastern state. Interview arranged on basis of letter stating qualifications and salary desired. Recent photograph helpful. P-5886, Engineering News-Record.

ROAD, BRIDGE general supt. required for multi-million dollar project, Eastern U. S. Excellent opportunity for right man. Please submit educational background, experience, references, salary desired. P-5887, Engineering News-Record.

ENGINEER OR Chief draftsman experienced in reinforcing steel detailing and quantity take-off required by fast growing reinforcing fabricator. Excellent salary and opportunity for quick advancement for aggressive man. Send resume to Brocker Mfg. & Supply Co., York, Pennsylvania.

STRUCTURAL STEEL Sales Engineer a nationally known manufacturer of steel products has an opportune opening in sales for the right man. The man we want must be a graduate structural engineer or its equivalent. He should be between 35 and 45 years of age and have at least five (5) years experience in selling radio, television, and transmission towers or similar fabricated products. He must have a proven successful sales record. The products he will sell are nationally advertised and his opportunities are unlimited. Salary open, commensurate with experience and ability. Our staff knows of this advertisement. All replies will be held in strictest confidence. Send complete resume to P-5806, Engineering News-Record.

WANTED: STRUCTURAL Draftsman in small growing structural and plate shop in prosperous community in far Midwest. Good working conditions and benefits with unusual opportunity for growth. P-5921, Engineering News-Record.

SALES ENGINEERS—New England franchisee for new important construction material wants representatives for Maine, Vermont, New Hampshire areas. Will consider semi-retired men with contacts among architects. Excellent opportunity. P-5922, Engineering News-Record.

WANTED: STRUCTURAL steel detailers. Please state experience and salary desired with complete resume. Berger Steel Company, Inc., Lafaytte, Ind.

POSITIONS WANTED

CONSTRUCTION STIFF, Rigger, who has worked with lubricating oil for years as a hobby, seeks employment in a modest capacity, with a construction company, or other fleet owner using large quantities of oil, where his information and paraphernalia will be investigated, and where he will be encouraged to go ahead with some things he wants to do. Local or foreign. Sidney Stribling, Sta. 8, Asan, Agana, Guam, M. I.

ESTIMATOR, AGE 30, general const. 8 yrs., estimating, purchasing, expediting and field supervision. Will relocate. PW-5662, Engineering News-Record.

ENGINEER, STRUCTURAL design and construction, BCE, PE, age 27, married, 7 years diversified experience. Desires responsible position with progressive organization in New York or New England. Resume furnished on request. PW-5720, Engineering News-Record.

POSITIONS WANTED

ENGINEER, BSCE, 29, registered. Experience construction, structural design, estimating & sales. Prefer Florida or South-East. PW-5808, Engineering News-Record.

CONTRACTORS ASSISTANT or construction company manager. Thorough knowledge of estimating, general supervision, costs and management, 25 years with general contracting organizations on buildings, engineering work and government projects. California, southwest or mid-west preferred. PW-5836, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Illinois.

NEW YORK client contact—registered architect will represent non-metropolitan architects or engineers as client or consultant contact. Diversified domestic and foreign experience. PW-5858, Engineering News-Record.

ELECTRICAL SUPERINTENDENT. Experienced in overhead and underground power distribution. High voltage transmission lines available April 15. Will go anywhere. PW-5770, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT—young, graduate civil engineer experienced as an engineer and superintendent with general contractors on large building projects. Can handle complete supervision. Desire responsible and challenging position. PW-5941, Engineering News-Record.

SUPERINTENDENT, GENERAL construction, wide experience on industrial and commercial bldgs; sewage treatment plants, schools, churches and tunnel work. Desires position of similar responsibility with progressive organization. 30 years experience, registered engineer. PW-5940, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT, for Nike Rocket Sites. Just completed first site in country, for actual operation. Supervised all work, purchased all materials. Have connections to purchase approved government material, at minimum prices. Fifteen years experience; can supply references. Ready for immediate employment. Willing to travel. PW-5881, Engineering News-Record.

DRAFTSMAN—PW-5878, Engineering News-Record.

CHIEF ENGINEER, graduate mechanical and structural, employed, desires permanent position in modern company, engineering, fabricating, or construction. Broad training and experience. Bona fide principals only reply, please! PW-5863, Engineering News-Record.

(Continued on page 106)

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

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1420 Gilpin St. Denver 6, Colorado

Engineers—Foremen—Office Men

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Permanent Openings Available at Our Cleveland, Ohio Offices for qualified DESIGNERS experienced in:

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- - - - Top Hourly Rates
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WRITE—giving complete details of experience, education, age, etc.—to:

E. A. Kolner,

ARTHUR G. McKEE & COMPANY
2300 Chester Ave. Cleveland 1, Ohio

WANTED
EXPERIENCED ASPHALT SUPERINTENDENT

Must be able to assume full charge of modern plant and field operations. Old established firm—Central Jersey. Give full experience and income desired in first letter.

P-5815, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

THE AUSTIN COMPANY
Offers Opportunities to Qualified Engineers and Draftsmen

Positions are open to capable engineers and draftsmen who can design and/or prepare plans and specifications for complete industrial plants, all related structures, and building equipment falling within the following categories:

DESIGNERS—Office buildings, laboratories, and industrial buildings. Positions require those possessing vision and creativeness.

STRUCTURAL—Industrial buildings and miscellaneous structures of steel and reinforced concrete.

MECHANICAL—Heating, air conditioning, ventilation systems, process piping, conveying systems, plumbing, sewer, and sprinkler systems.

ELECTRICAL — Industrial lighting and power distribution and controls.

DETAILERS—Structural steel fabrication for industrial buildings.

Assignments are in connection with our long-established offices located on the East coast and Midwest areas. Desirable working conditions, established vacation and sick leave plans, also paid holidays.

Full particulars as to education, experience, and compensation desired should be given in first letter.

NATIONAL HEADQUARTERS
16112 Euclid Ave. Cleveland 12, Ohio

ENGINEERS

Challenging positions available in St. Louis office for qualified engineers for design and supervision of bank buildings, hotels and related structures, located in U.S.A., Mexico and South America.

STRUCTURAL DESIGNERS—Seasoned in all phases of design of reinforced concrete and structural steel for foundations and framing, for alterations and new buildings of unusual character.

ELECTRICAL—Creative and experienced in design and construction of large electric signs, with experience in the design of lighting and wiring for commercial buildings also desirable.

MECHANICAL—Top quality man with broad experience in the design and supervision of plumbing, heating and air conditioning for commercial buildings, some electrical experience desirable. Will be required to survey and report existing job conditions, field inspections, supervision and trouble shooting. Must know latest methods, materials, estimating and contractor's procedure. Position entails considerable travel and responsibility.

These positions offer unusual opportunities to men with proven ability, records and experience in their respective fields, salaries will be paid accordingly.

Furnish complete particulars regarding age, education, experience, reference and present salary. All replies are confidential.

Retirement plan at no cost to employees, incentive bonus plan, paid vacations and group insurance.

Chief Engineer

BANK BUILDING & EQUIPMENT CORPORATION OF AMERICA
906 Sidney Street St. Louis 4, Missouri

WANTED
EXPERIENCED ESTIMATOR

On Highway and Miscl. Work. Old established firm in Central New Jersey.

Give full experience and income desired in first letter.

P-5818, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

HIGHWAY ENGINEERS

For office work on long-term highway design projects. Desire adequate experience or training including alignment and profile computations, interpretation of aerial photographs, geometric design of interchanges and associated work.

Employee Benefit and Retirement Plan, paid vacations and holidays, sick leave. Modern, air conditioned offices in downtown St. Louis. Please write fully to or inquire at

SVERDRUP & PARCEL ENGINEERING CO.

1625 Eye Street, N.W.
Washington 6, D. C.

1134 Locust
St. Louis 1, Mo.

CONSTRUCTION ENGINEER

Graduate Civil Engineer with 10 to 15 years experience in heavy construction, field supervision and job management of industrial buildings involving many mechanical trades. Must have ability to push work through to early conclusion. Hospitalization, Insurance, Retirement and other employee benefits. Permanent position in expanding company. Our employees know of this ad. Please submit resume of detailed qualifications, experience and salary expected.

P-5911, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALES ENGINEERS

Middle Atlantic Division of large company has openings for sales engineers in Baltimore; Harrisburg, Pennsylvania; and Trenton, New Jersey to handle promotion and sale of fabricated metal products to engineering and construction markets. Ages 24 to 30. Engineering degree necessary.

P-4753, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Designers Detailers Draftsmen
for work on
Bridges, Expressways, Turnpikes

PERMANENT POSITIONS DEPENDING ON EXPERIENCE AND ABILITY
PAID VACATION, SICK LEAVE HOSPITALIZATION, LIFE INSURANCE
INCLUDE EDUCATION, EXPERIENCE, REFERENCES AND SALARY EXPECTED IN APPLICATION LETTER

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1805 GRAND AVE. KANSAS CITY 8, MO.

ESTIMATOR

Experienced in process equipment and piping costs for chemical plant and refinery construction. Position offers good future with progressive Penna. firm. Send resume to—

J-65, P. O. Box 3575
Phila., 22, Pa.

DESIGN ENGINEERS

Excellent opportunity for Engineers experienced in design of Filter Plants and Water Works—Bridges and Highways. Recent Graduates also accepted. Good living conditions and Bonus and Pension Plan. Include experience, date available, salary desired in first letter. Gannett Fleming Corddry & Carpenter, Inc., Box 366, Harrisburg, Pa.

MECHANICAL ENGINEER WANTED

Graduate Mechanical Engineer experienced in the operation of Fourdrinier paper machines, refining and related equipment for large progressive mill in Middle Atlantic States. Under 35 years of age. Good salary and excellent opportunity for advancement. Give detailed resume of experience.

P-5434, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS WANTED
(Continued from page 104)

CONSTRUCTION ENGINEER and superintendent, 36, BSCE 1941, P.E.&L.S. in N.J. Experience includes work as contrs. engr. or supt. on powerhouses, chem. plants, incinerators, industrials, and air base bldgs. Can handle supervision, layout, costs, estimating and purchasing in field or main office. Present salary $175. wk. as a project engr. on large bridge piers. Available after 3-18-55. PW-5872, Engineering News-Record.

ESTIMATOR—EXPERIENCED in all phases of competitive bidding on buildings (pricing, purchasing, etc.) to 10 million, C.E. degree, age 35, prefer Southwest. PW-5868, Engineering News-Record.

ACCOUNTANT: FIELD clerk: costs material controls: varied construction (exp. Gov.'t.) & private projects. PW-5889, Engineering News-Record.

ELECTRICAL SUPT—20 years exp with large industrial and chemical plant installations. Seeks permanent connection in similar capacity. Will consider any locality. PW-5894, Engineering News-Record.

CONSTRUCTION MANAGER—chief estimator age 51 experienced in all types construction—field control cost control—purchasing—subcontracts—client relations currently employed wanting other connection. PW-5901, Engineering News-Record.

CIVIL ENGINEER desires field position with industrial construction firm in Chicago-Milwaukee area. 2½ yrs. exp. in heavy chemical const. Mostly methods and labor control. Single, age 26, available May. PW-5900, Engineering News-Record.

BCE, AGE 28, 7 years field experience. Desires position in structural design with consultant. PW-5929, Engineering News-Record.

CHIEF ACCOUNTANT, controller, office manager, twenty years diversified experience, sober, reliable, used to responsibility, bondable, knowledge of phase and job costs can install & maintain systems, though now employed with one of the leading business engineering firms, desire change. PW-5920, Engineering News-Record.

SEWER FOREMAN young, ambitious family man desires position with opportunity for promotion to superintendent. Presently employed with large Midwest firm doing municipal and large scale sub division installations. Five years experience as foreman. Ten years a member of heavy equipment operators union. Will relocate. PW-5924, Engineering News-Record.

CIVIL ENGINEER MIT Graduate 20 years varied experience on dams, highways and airports. Estimating, construction engineer and design experience. Foreign or domestic employment. Completed two foreign assignments. Age 46 good health presently employed desire to make change. Available two weeks notice. PW-5925, Engineering News-Record.

WORK WANTED

DETAILING, REINFORCED concrete design, job inspections, on contract basis. Krell—Box 202—Bettendorf, Iowa.

SPECIAL SERVICES

Appeals Service; Construction Contractors, who intend to appeal decisions of the contracting officer concerning disputed questions of fact under government contracts, are offered complete representative service covering analysis, preparation and processing of appeals. SS-5062, Engineering News-Record.

WANTED

ANYTHING within reason that is wanted in the field served by Engineering News-Record, can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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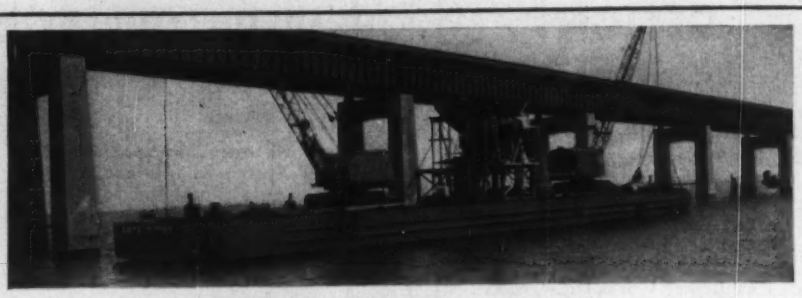

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Pile Driving Equipment
Vulcan #1 or equal, 9B3 or 10-B3. Also suitable boiler and leads. Quote price, serial numbers and description of equipment.

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L-G #14-41B — **Bucyrus-Erie Caterpillar Steam Crane,** 75' boom Serial #10976. Rebuilt 1948 by H. O. Penn Machinery at a cost of $8,117.00. New International Vertical Firetube Boiler (150# W.P.) and Oil Burning Equipment installed 1948. Presently working — Excellent Condition. **$11,000.00 f.o.b. our yard.**

L-G #15-41B **Bucyrus-Erie Caterpillar Crane,** 65' Boom—10' Extension, Serial 4761. Rebuilt 1947 by H. O. Penn Machinery at a cost of $7,175.89. Installed New Oil Burning Equipment and New International Vertical Tube Boiler (150# W.P.) in 1948. Excellent condition. **$11,000.00 f.o.b. our yard.**

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MANITOWOC Model 3000 Shovel & Drag, 1¾ Yd. $27,500.00
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MARION Model 93M Shovel & Drag, 2½ Yd. 30,000.00
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268 CFM	500 psi	10/4¼x10 Ingersoll 75 HP Synch
278 CFM	125 psi	2 stage Chicago PB-50 HP Elec
285 CFM	125 psi	2 stage Gardner "WB" 50 HP
291 CFM	40 psi	3 cylinder Ingersoll Type 40
294 CFM	100 psi	10x11 Ingersoll ES-1 50 HP Elec
343 CFM	500 psi	11/5x13 Worth Elec or steam
355 CFM	100 psi	12¼x10 American WTR 60 HP Elec
364 CFM	20 psi	12x7 Gardner "RX" 2 available
426 CFM	100 psi	12x11 Ingersoll ES-1 NL—Oilless
426 CFM	100 psi	12x11 Ingersoll ES-1 75 HP Elec
460 CFM	125 psi	13/9x10 Ingersol. XRB—Duplex
510 CFM	125 psi	13/8x12 Ingersoll XRB—Duplex
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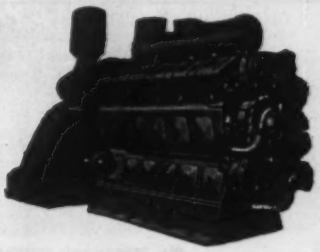

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1100	General Motors	16-278A	1600	720	300	General Motors	8-268A	450	1200
1000	General Motors	16-567B	1440	720	250	Clark	GD-4	375	360
750	General Motors	12-567	1080	720	200	General Motors	8-268A	350	900
700	Worthington	EE-8	1000	327	175	General Motors	12-71	275	1800
675	Fairbanks Morse	38D	960	720	150	Buckeye	80	240	600
500	General Motors	8-567	720	720	148	Fairbanks Morse	32E14	220	300
500	Alco	6-12	x13T	750	600	100	General Motors	3-268A	150	1200
350	Baldwin	VO-6	510	450	60	General Motors	6-71	90	1200
320	Enterprise	DSG-6	460	450					

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100 HP Farquhar with stock. Built 1947. Inspected Jan. 1954 for 150# pressure. Locomotive type with 4 Steel wheels. 1097 Sq. Ft. Heating Surface $1000. Located at Spencer, Ind.

WARREN BROTHERS CO.

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LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40, 60 and 70 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

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MANITOWOC Model 4500, 120' Boom, 5½ Yd. Bucket, New 1951.....$100,000.00

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Albert Pipe Supply Co., Inc. 109
Aberthaw Co. 107
Ambursen Dam Co., Inc. 109
American Air Compressor Corp. 107
Anderson Equipment Co. 106, 107
Arabian American Oil Co. 104
Austin Co. 105

Bank Building Corp. of America 105
Boers Equipment Co., Gil. 107
Buff 108

Clark Excavating Co. 109
Contractors Machinery Co. 107, 108

Deatherage & Son, G. E. 104
Deephouse Equipment Co., Inc. 109
Diesel Motors Company 106
Drachman Steel Corp. 108

Forsythe Equipment Co., Inc. 107, 108
Foster Co., L. B. 108
Frank, M. K. 109

Gannett, Fleming Corddry & Carpenter, Inc. 105
General Sand & Stone Corp. 109
Gillis & Co. 109
Greenpoint Iron & Pipe Co. 109
Greensburg Machine Co. 107

Hickerson, Roy D. 108
Howard, Needles, Tammen & Bergendoff 105
Hughes Bros., Inc. 106

Lestan Corp. 109
Linde-Griffith Construction Co. 106
Lorenz Equipment Co. 107

McKee & Co., Arthur G. 105
McMinn's Industries, Inc. 109
Midwest Steel Corp. 109
Mississippi Valley Equipment Co. 107, 108
Morrison Railway Supply Co. 109
Moto Crane Service, Inc. 109

National Blue Print Co. 108

Ornitz Equipment Corp. 106

Riverside, Califronia, City of 103
Romeo Rock Bit Service Co. 106

Samborn, Steketee & Assoc. 103
Schoonmaker Co., Inc., A. G. 107
Scott Bros., Inc. 109
Sherman Crane & Service, Inc., Roger 109
Snider, J. R. 106
Southworth Tractor Co., T. 107
Stanhope, Inc., R. C. 108
Sverdup & Parcel Engineering Co. 105

Tamblyn System 104
Tuckahoe Construction Co., Inc. 109

Visionfine Co. 108

Warren Brothers Co. 107
Warren-Knight Co. 108
Warwick Corp. 106
Weiss Co., B. M. 107, 109
Williams Construction Co. 106, 108
Wilson Engineering Co. 104

ADVERTISERS IN THIS ISSUE

Allis-Chalmers Mfg. Co. (Tractors)..28, 29
American Bridge Div., U. S. Steel Corp.....6, 7
American Hoist & Derrick Co.....45
Armco Drainage & Metal Prod. Inc. 2nd cover
Automotive and Aircraft Div. American Chain & Cable Co.....71

Barber-Greene Co.....76
Belmont Iron Works.....76
Bethlehem Steel Co.....34
Blaw Knox Constr. Equip. Div., Blaw Knox Co.....63
Bruning Co., Inc., Charles.....3rd cover
Buffalo Forge Co.....10
Butler Mfg. Co.....30
Byers Co., A. M.....81

Canadian Int. Trade Fair.....33
Celotex Corp., The.....55
Chapman Valve & Mfg. Co.....20
Clearprint Paper Co.....84
Concrete Surfacing Machinery Co.....64

Dicalite Div., Great Lakes Carbon Corp. 60
Dudgeon, Inc., Richard.....76
Du Pont de Nemours & Co., Inc., Explosives Dept.....95

Economy Forms Corp.....78
Electric Tamper & Equipment Co.....72
Erie Strayer Co.....52

Fairbanks-Morse Co.....73
Fate-Root-Heath Co.....42
Felker Mfg. Co.....82

General Electric Co.....56, 57
German American Trade Prom.....111
Goldblatt Tool Co.....64
Greenlee Tool Co.....54
Griffin Wellpoint Corp.....86
Gunite Concrete & Construction Co.....83

Habco Mfg. Co.....87
Hamilton Rubber Mfg. Co.....83
Harnischfeger Corp.....1

Imperial Pencil Tracing Cloth.....80
International Harvester Co (Trucks)...69
Irving Subway Grating Co.....15

Jackson Vibrators, Inc.....72
Johns-Manville Corp.....65
Jones & Laughlin Steel Corp.....9

Kern Instrument Co.....8
Keuffel & Esser Co.....11
Knickerbocker Stamping Co.....88

Le Tourneau-Westinghouse Co....75, 77, 79
Lincoln Electric Corp.....49
Lone Star Cement Corp.....18

MacWhyte Co.....89
Maxon Construction Co., Dumpcrete Div. 87
Mayo Tunnel & Mine Eqpt. Co.....78
McGraw-Hill Book Co.....62
McKiernan-Terry Corp.....88
Mississippi Glass Co.....98
Motorola Inc.....37

Northwest Engineering Co.....3

Owens Corning Fiberglas Corp.....38

Pennsylvania Drilling Co.....83
Philco Corp.....4, 5
Phoenix Bridge Co.....78
Pittsburgh Steel Products Co.....66, 67
Portland Cement Assn.....70
Powder Power Tool Corp.....51

Republic Steel Corp.....40, 41
Rust-Oleum Corp.....32
Ryerson & Sons, Inc., Jos. T.....16

Schramm, Inc.....46
Servicised Products Corp.....111
Simplex Valve & Meter Co.....85
Smith Co., S. Morgan.....68
Sonoco Products Co.....58, 59
Spencer, White & Prentis, Inc.....86
Sprague & Henwood, Inc.....88
Standard Dry Wall Products.....61
Symons Clamp & Mfg. Co.....2

Texas Co.....12, 13
Timber Engineering Co.....48
Timken Roller Bearing Co.....4th cover
Tinney Drilling Co.....87

Unit Crane & Shovel Corp.....92
Universal Form Clamp Co.....85

Vickers, Inc.....31

Weil Pump Co.....14
Wheeling Corrugating Co.....97
Willys Motors Inc.....72, 73
Wisconsin Motors Corp.....80

Professional services 110

SEARCHLIGHT SECTION

(Classified Advertising)

H. E. Hilty, Mgr.

Employment 103, 104, 105, 106
Educational 104
Notices
Proposal 98-103
Equipment
(For Rent, Sales, Wanted)..106-109

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EDITORIALS

Construction Bracing Again

RECENT FAILURES of tapered steel girders on the West Coast may be creating the impression that the taper was the source of the trouble. Actually there is no evidence to support this view. Rather, it is the familiar case of inadequate lateral bracing for the girders during the construction period. The Los Angeles building authorities have acted to increase their requirements for such bracing (ENR March 17, p. 28), which should make tapered girder failures a thing of the past.

It seems well that the tapered girder not be too summarily dismissed for it has the advantage of using less steel than constant-depth sections. This results from the fact that the tapered members, while as deep at mid-section as constant-depth members, are shallower at the ends, in accordance with the reduced bending moment there.

These tapered members have permitted many builders of one-story structures in the Los Angeles area to cut building costs, and once the girders are in place, with wood joists between and a roof deck nailed on, the resulting construction has proved very satisfactory. But they do require adequate lateral bracing, just as do all other kinds of beams and girders. It is a requirement too often overlooked.

Expanding Water Needs

TWO RECENT DEVELOPMENTS add emphasis to the need for a regional and national approach to problems of water supply. The first involves a question of priority establishment among water users; the second concerns the stress accorded water resource development. Both instances evidence the need for the broad approach.

The first instance involves a question raised by western New York State fruitgrowers who have a scheme for taking supplemental irrigation water from the state's Barge Canal. The hitch here is that the canal draws some of its water from the Niagara River above the Falls, and all diversions of water from that river for navigation or power purposes are fully controlled by international agreement.

Most of the Niagara water is earmarked for power development. Plans to use every drop not needed for navigation purposes are now waiting only for a decision as to what agency should build the new power plants on the New York side of the river. Consequently, if the politically powerful fruit growers push their plan, the state legislature (or possibly Congress) must decide whether irrigation needs take precedence over power.

This is but one example of the problems introduced by a generally increasing use of irrigation water in humid regions, where priority of such use has not yet been established.

The second instance, evidencing need for a broad approach, is the recent comment by David E. Lilienthal, former chairman of both the Tennessee Valley Authority and the Atomic Energy Commission. Speaking at the annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers in Chicago, Mr. Lilienthal sharply criticized this country for spending so much money on attempts to use atomic energy as a source of power and so little on meeting the nation's growing needs for more water. He said that a fraction of the money and technical talent now being spent on atomic power would solve the problem of freeing seawater of the minerals that now prevent its use for irrigation, industrial and domestic purposes. He claimed that it will be a while yet before the need for power becomes as critical as is the nation's present needs for water.

These two instances are but added new evidence—as if any were needed—to support the case for tackling the country's water supply problems on a broad scale, regional or national. The point is: as our water needs increase, our thinking about them must enlarge accordingly.

Progress on Bridge Clearances

IT IS GOOD NEWS that the Department of Commerce has issued a report on navigational clearance requirements for highway and railroad bridges in which a plea is made for both lower clearances and more fixed bridges. Many millions of dollars have needlessly been spent in the past in fitting bridges to unrealistic clearances, so that if the plea produces results big economies are possible.

There is increasing evidence that a more realistic attitude is developing on bridge clearances. Task groups of the Hoover Commission's Water Resources Committee held meetings on the subject in various regions of the country and developed a surprising amount of cooperation between government and shipping interests, just by letting them discuss the subject. In Connecticut, conferences held between the state highway commissioner and the executive of the New York Harbor towboat organization resulted in agreements for clearances that were lower than originally proposed. When they were approved by the Corps of Engineers, the potential savings ran into several million dollars. There have been other examples of improved attitudes on the bridge clearance question.

In sending the Department of Commerce report to the state governors, Secretary Sinclair Weeks estimated that adoption of its recommendations would save from $5 to $10 million a year in bridge construction costs. So much progress has been made in thinking and talking about bridge clearances in a reasonable manner that these savings seem almost within grasp.

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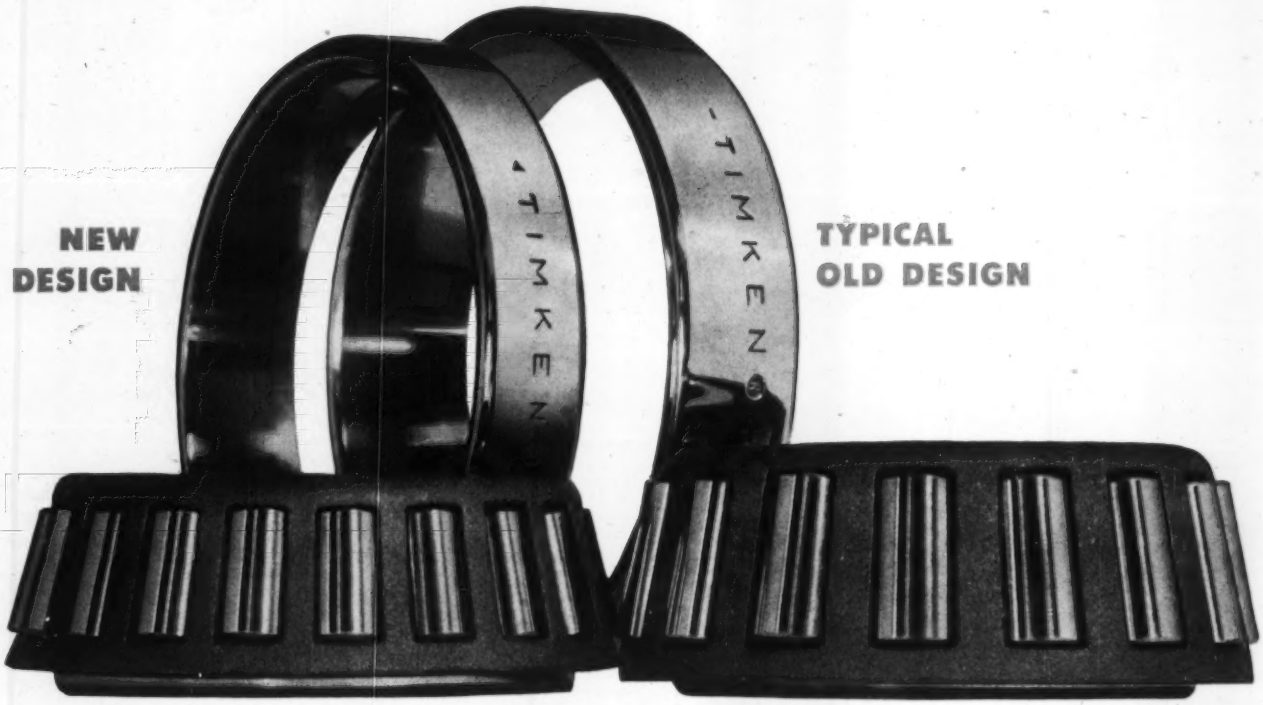

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